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ABSTRACT

This collection of essays, which evolved from the Professional Lecture Series on Teaching and Learning and Instructional Workshops on Teaching and Learning held at the University of Colorado (Boulder), addresses a variety of styles and situations for teaching and learning. The following essays are included: (1) "Teaching as Architecture: Humanities the Foundation" (Nancy Klenk Hill); (2) "So You Want To Be an Actor...Stages of Learning in the University Setting" (Joel G. Fink); (3) "Facilitating Discussion" (R. G. Billingsley); (4) "Ways of Knowing" (David Hawkins); (5) "You Can Get Good Help These Days: Working with Teaching Assistants in Large Lecture Classes" (Walt Stone); (6) "Memory for Classroom Algebra" (Lori Meiskey, Alice F. Healy, and Lyle E. Bourne, Jr.); (7) "Teaching Anthropology: Writing Captions for the Blind" (A.J. Kelso); (8) "Do Professors Need Professional Ethics as Much as Doctors and Lawyers?" (James W. Nickel); (9) "Use of the Socratic Method" (Marianne Wesson); and (10) "Gendered Subjects" (Joyce McCarl Nielsen). (JD)

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On Teaching

Volume II

Mary Ann Shea, Editor

Faculty Teaching
Excellence Program

PS

On Teaching

Volume II
Mary Ann Shea, Editor

Faculty Teaching Excellence Program
University of Colorado at Boulder

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Faculty Teaching Excellence Program

Prefatory Notes

The Faculty Teaching Excellence Program at the University of Colorado at Boulder is just one of many efforts being directed at enhancing the quality of the educational experience at the University. But it is perhaps the most important one because it focuses on the most central component of educational excellence—the faculty—and because it is predicated on the optimistic assumption that faculty can improve their teaching, that faculty can be taught to teach. Our success with the program over several years now, under the outstanding leadership of Mary Ann Shea, has proven this assumption to be correct. Faculty can help other faculty to teach more effectively.

One of the most effective ways for faculty to help each other is for the very best teachers to make an effort to capture explicitly, in writing, what they believe are their own successful strategies. Teaching is often considered an art, a talent based on innate skills, not on a set of specific facts or skills that can be learned. If you ask great teachers how they do it, at first they are likely to have little concrete to offer in reply—a vague "I don't know, I prepare well and just go do it." But if pressed just a bit, they have a lot more to offer.

The volumes in this series press these great teachers by asking them to put their thoughts and advice in writing. It makes them think carefully about what they are doing as teachers and it makes these thoughts readily available to others. And the emphasis is on helping others improve. These essays, then, have great potential to influence the way you teach and to enhance your effectiveness as an educator. I am sure that everyone will find many interesting ideas here—I hope you will put some of them to use in your teaching. If you do, you will have made this volume an enormous success.

The noted scholar and essayist Jacques Barzun has said, "Teaching is not a lost art, but the regard for it is a lost tradition." We are working to reestablish this tradition with our Teaching Excellence Program and with the publication of these volumes. You should ask yourself what you can do to increase the value placed on teaching so that the tradition will live on. One of the best ways is to commit yourself to improving your own teaching. These essays will help; your commitment will guarantee it.

Bruce R. Ekstrand
Vice Chancellor for Academic Affairs
and Dean of Faculties
University of Colorado at Boulder
Spring 1990

Dedication

On Teaching, Volume II is dedicated to E. Gordon Gee, President of the University of Colorado. It is his goal to establish more visibly the synergism between teaching and research in order to improve and enhance undergraduate and graduate education. To that end, President Gee has placed teaching and learning in the forefront at our University. He has drawn a community of scholars together to talk about teaching and learning in very important ways—often for the first time.

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Introduction

The Faculty Teaching Excellence Program at the University of Colorado at Boulder is devoted to improving undergraduate education. Accordingly, the program supports faculty in their attempts to enhance their teaching, while assisting them to better understand the nature of learning. As a primary means of achieving its goals, the program offers faculty an unthreatening forum in which to talk about such matters as teaching practices, enlightening students, handing down academic traditions, opening dialogues, or even something as elementary, but significant, as simply remembering to prepare an outline for today's class period.

This collection of essays is witness to the complexity and richness of our faculty's knowledge and to their teaching acumen. Ordinarily, teaching ability and insight into learning are largely invisible virtues; for rarely do faculty watch colleagues teach in order to benefit from their experience. The essays in this volume of *On Teaching* attempt to substitute for direct experience by revealing, through prose, what our faculty do in the context of their classrooms and disciplines. Admittedly, there is a danger in talking about teaching as if it were a skill that could be reduced to a set of simple formulae. But surely teachers can, to a certain extent, describe what they do when they teach, examine typical problems encountered in the classroom, and pass on discoveries and solutions.

Volume II of *On Teaching*, like its predecessor, honors the Boulder campus faculty. The essays evolved from two activities of the Faculty Teaching Excellence Program: first, the Professional Lecture Series on Teaching and Learning and, second, Instructional Workshops on Teaching and Learning. As in Volume I, the essays address a variety of styles and situations for teaching and learning. Yet despite their many differences, all the essays bespeak the conviction that learning is life-affirming and that faculty can, and should, participate in this affirmation.

If through the publication and dissemination of these essays we move forward in developing a culture of teaching at our university, then we have not only fostered good teaching, but also emulated it. For excellence in teaching depends on reciprocity: on students learning from us, even as we learn from them and from each other. This book is a way of reminding ourselves about alternative approaches to teaching. The faculty's *desire* to teach well is already there; here are some steps toward that goal.

Mary Ann Shea
Director
Spring 1990

I am indebted to Andy Knoedler, a new associate of the Faculty Teaching Excellence Program, for his editorial assistance with this book.

Mary Ann Shea
Spring 1990

Teaching as Architecture: Humanities the Foundation

Nancy Klenk Hill

Joy is the connecting link between the terms of my title. Joy as in "a thing of beauty is a joy forever." I mean to suggest that a superb class, one in which students have the experience of stretching to reach something previously outside their intellectual grasp, is a joy as enduring as that of the Parthenon or Chartres. Indeed, I mean to go so far as to argue that such intellectual joy, the peculiar and wonderful joy associated with the university, underlies that joy expressed in marble and limestone.

Joy is not a universally celebrated emotion in the university. The fear of the initiate and the exhaustion of the experienced seem sometimes to smother that joy that all of us have felt at some point in our teaching careers. There is a fleeting moment somewhere in the life of the teacher when she might utter, in parody of Keats, "O happy happy life/ Forever would she learn, forever teach." More often, I am afraid our experience tends to be the "heart high sorrowful and cloyed,/ A burning forehead, and a parching tongue." With Wordsworth we ask, "Where is it fled, the glory and the dream? Whither is fled the visionary gleam? Where is it now, the glory and the dream?"

My own early experience as a teacher was marked more by fear than by joy. I was all too well aware of my too close proximity in age to my too-intelligent students. Consciousness of my ignorance stupefied me into an unconscious rigidity broken only by a kind student leaving on my desk an anonymous note which read, "Move a little." My architectural analogy does not suggest assuming and maintaining a columnar shape in front of the classroom.

What the architectural analogy can do for us is to give us a new image of ourselves and, with that new image, to restore some of the joy that should be indigenous to the profession. The architectural analogy can help us to assert the significance of what we do, and to combat the cultural values that elevate money and the ephemeral above the intellect and the enduring.

Now it will at once be objected by some that the analogy is quite impossible: we're comparing the passing with the permanent; the merely uttered, fleeting word with the monumental, the engineered. In proposing such an

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analogy I am reminded of a recent Humanities major who wrote that her undergraduate training had been perfect for law school. In her interdisciplinary Humanities classes she was always being asked to compare unlike things; the same, she said, was true of law school. I believe, in fact, that the teacher and the architect do quite similar things, and that if teachers began to perceive their work as something that may last as long as buildings last, they might begin to image their work as having greater significance, and to feel again a sense of joy.

At the outset I want to acknowledge that my analogy may not be universally acclaimed. To speak of teaching in terms of permanence rather than transience may strike terror in as many hearts as it creates joy. Especially for beginning teachers it is hard just to get through the class period. "And now," I hear them muttering, "she wants us to think about the permanent effects we're having on our students? Spare us."

Others may be silently grumbling, "Egad! We thought the yellowed-note syndrome was bad. Now she's suggesting we inscribe our utterances in stone!"

My intention is not to do either of these things, but simply to remind us that our work has more far-reaching effects than we usually consider. The fact is that something is going to be built, just as something is going to fill the mind. What is built, however, may be a strip—a tasteless array of gaudy signs towering over sheds; covered stalls for selling goods—and designed, if designed they were, only for cost effectiveness. The word "architecture" for an only slightly dignified shantytown is obviously absurd.

So, too, with the mind. We are receptive to the world around us, and we are receiving images, words, situations all of our days. But mostly these impressions are random, helter-skelter. Education organizes images into coherent structures so we have some grasp of how one concept is related to another, what its implications are, what its historical origins. Studying ideas in this way gives us some sense of control, some means of creating order out of disorder—however illusory that order may be. It is a matter of structure as opposed to random chaos—and the mind thrives.

To begin, then, with our extended analogy, the teacher, like the architect, must first choose, and prepare, the site. Is the selected site, in this case the particular course for a particular set of students, appropriate? Is the proposed structure suitable for this location? Is some sort of preparation of the ground needed before the structure can be built? Does one have to adapt plans drawn up for a different situation?

We are all aware of the disastrous consequences when these questions are ignored. Architecturally we have the buildings on the Front Range designed in Kansas or Texas without the slightest cognizance of the spectacular views or the special ambience of Colorado. Such buildings do aesthetic damage by asserting that any place is just like any other, that a human structure may be plunked down anywhere without regard for its surroundings, that financial transactions outweigh any other considerations such as visual, historical,

or cultural. Denver is, alas, full of such buildings—and they will stay there, thwarting the realization of uniqueness and particularity that Denver needs to become a self-assured, special city.

Academically, we have courses designed for graduate students offered to beginning undergraduates. Such courses are not site specific, and it's not surprising that the structure erected on such ill-prepared ground collapses. Because we do not have to look at the results, in this case frustrated students, after the disastrous course is completed, we are not often aware of what damage has been done. Buildings sit there. We cannot avoid seeing them. Students leave and take their disappointment with them. But we have done intellectual, and possibly emotional damage with an ill-considered course, and the human results may be just as significant and as enduring as that of an ill-conceived building. Banality in architecture causes us in effect to close our eyes, the windows of our mind. Banality in ideas has exactly the same effect. We turn off, get bored.

If the negative analogy holds true, the positive does even more so. A site-specific building is a joy to behold for it enriches the environment rather than detracting from it. One thinks of Le Corbusier's pilgrim chapel at Ronchamps, where natural setting and sculptured building interact in such a way that one is unimaginable without the other. So, too, with a well-sited course. Students feel their particular needs have been met and that their growth has been enhanced. They experience that peculiar joy a university can provide, that joy of stretching beyond their current intellectual boundaries and becoming more than they had been before. This is why introductory courses are inappropriate for upper-classmen.

A few years ago a junior Humanities major taking Humanities 101 came to my office with a look of disgust on his face. "How can you stand to teach these freshmen?" he asked me. "They are so mindless; their attention span is so short." I reminded him that he too had been a freshman, and pointed out to him that teaching freshmen, especially 400 of them at a crack, is not the same as teaching juniors. I suspect that his criticism was really of the teaching rather than the students, of a course structure that guided students rather than giving them rooms to decorate as they pleased or additions to construct as they thought needed. Those years between the freshman and the junior are years of extraordinary growth, and a course site-specific for freshmen may seem unduly restrictive for a junior.

Once the site has been selected, the ground prepared, it is time for planning—not yet for blueprints, but for vision. How do we, as architect-teachers, envision our structure? Will we adopt a plain, utilitarian, functional style, or something more expressive? Will we imitate a style from the past or try to anticipate the future? Will our style be playful or pedestrian? Do we want those exposed to this structure just to pass through it, experience it as but another tract-house in a suburban development, or to recall its spaces with delight, even wonder? Will we build in the unexpected, allow for the inhabi-

tants to shape their surroundings in some way—or will we design something in factory modules allowing little alteration?

These are all real choices—and they have real consequences. Failure to take such choices seriously may lead to the student who, on graduation, cannot remember a single class as special and significant, or a single teacher as remarkable. I am not speaking of a hypothetical student. I speak of my own nephew, in my own university. I think his loss is life-long.

A well-planned course, like a well-planned building, has variety and unpredictability. Otherwise monotony and its dread cousin banality move in. Sure to follow will be their even less desirable relative, vacancy of mind. But building in the unpredictable is risky. One might fall prey to gimmickry and wind up with the academic equivalent of McDonald's golden arches or the tacky Tudor of Knight's Inns.

On the other hand, sticking to the tried and true can result in sterility. The successful plan, organically sound and inviting human experience, is something like Montreal's Habitat. The unsuccessful, as appealing as a filing cabinet and as deadening to the dweller, is epitomized by Chicago's Cabrini Homes.

A good plan is essential, but its realization may take some creative adaptation. Great architecture does not result simply from the architect drawing up the plans, giving them to the builder or engineer, and then walking away. Architecture, like teaching, is a vital process, an interactive process between all concerned, the plans, and the site. If the structure is to endure, to stand the test of time, to benefit those who experience it, there must be constant readjustment, reconsideration, re-evaluation, to the point where often the finished design, or completed course, bears little resemblance to the original plan.

This test of time is one test we professors do not take—or at least take seriously. Rarely do we think of our work enduring in time. We think in terms of days, not in terms of decades. And yet we are shaping a cultural environment as surely as architects. The ideas our students acquire in our classes will influence the choices they make in their private lives, and in our shared cities.

We can turn this analogy around and read in the architectural evidence of our cities the values taught by our culture. What is immediately apparent on the outskirts of any American city, or on the ubiquitous strip through it, is the proliferation of fast food joints. Their eerie similarity, whether in Connecticut or California, gives them a kind of solidity on the landscape belied by the ephemerality of their construction. Remember the London fish and chips shops of a few years ago? or the even more recent Tokyo bowls? Gone. To be replaced by barbecued chicken wings, to be replaced by Taco Bells. We are so accustomed to this architectural transience that we do not realize how deeply we have absorbed its fleeting values. We build in change and impermanence even in the glass walls of skyscrapers. Those walls reflect the passing of clouds and the shifting light of the day. Their shimmering surfaces are no more permanent than the rowhouses and the warehouses they have

replaced. Most of the activity in those glass houses involves money, and, except for an occasional October to remind us, we forget how unstable money really is. It can blow away on the winds of change as easily as the windows of Boston's Hancock Center can, and did, blow out onto the streets.

Structures for money we take seriously, often imitating the classical style of the Greeks and the Romans for our banks. Structures for people, especially the poor, we ignore, allowing our most unfortunate to settle on our decaying streets. What we appear to be building is something unknown in this country before: an upper class living in buildings that rival Versailles, and an under class living nowhere at all.

In a culture that elevates transience, but not transients, and money, but not the many, it is hard to think of teaching as a "thing of beauty" that is "a joy forever." And yet I am advocating that we not only think of teaching in that way, but that we see it as architecture. And to recall us to the values that preceded money and the ephemeral I turn to the second half of my title, "Humanities the Foundation."

It will seem naive, even foolish, to some to speak of Humanities as a foundation of anything. The word most commonly associated with Humanities—for all but a few cranks like last year's star Bloom or last Secretary of Education Bennett—is frill, as in "peripherfrill."

I mean, the solid stuff these days belongs to engineering, business, astrophysics—fields where people have titles when they graduate: I'm an engineer, a business person, an astrophysicist. Humanities graduates are left sounding rather naked as they acknowledge, I'm human.

The unexamined assumption is that everyone is engaged in that peculiar but necessary profession of becoming human. It is what you do on the side when your serious work of the day is over. Thus for one group of students to claim as their "work" the study of humans and the attempt to become one sounds embarrassingly frivolous and unprofessional. In our technology-obsessed age we have become rather apologetic about becoming human: it is so simplistic and it takes so little machinery or money that it is really rather suspect—almost anti-capitalistic.

What I hope to do here is to turn that assumption about the Humanities quite literally upside down. Instead of seeing the Humanities as a frivolous excrescence on an otherwise useful building, I would like to suggest we see Humanities as the foundation, the very cornerstone of the educational edifice. Now the architectural evidence of my own beautiful campus at the University of Colorado offers but ambivalent support for my thesis. If the Humanities constitute the cornerstone here, it is only by dint of occupying buildings long since vacated by more prosperous divisions of the university. The inscription over Norlin Library's west (and superseded) door reads, "Who knows only his own generation remains always a child." George Norlin's words are deeply humanistic, but the quad which they anchor contains a new addition to a relatively new chemistry building, another addition in process to the

chemistry building, several undermaintained humanities buildings, a theater in process of renovation, and several more science buildings slated for replacement or renovation. No new humanities classrooms have been built in 50 years. To the east, both engineering and business live in new, if outgrown, structures. And I have the audacity to argue for Humanities as the foundation? I do.

For all the value of sciences, the social sciences, engineering and business, there are certain kinds of questions they do not consider, questions which are generally recognized as the province of the humanities. We need all of these divisions to be a university; we need their interaction to be a great one. If we focus most of our energies and the bulk of our resources on everything but the humanities, we build a structure oddly unbalanced without any connection to our collective past. Business and engineering may help us to implement our ideals; they cannot create them; for if we allow our ideals to derive solely from money and technology we are in very serious trouble.

Humanities, by which I mean the languages, philosophy, the arts, and that history which stresses the human rather than the quantifiable, focus on human reactions to other humans and events, and on the human attempt to create values and meaning in life. In this regard the humanities are not a substitute for religious faith, though there are some in our century who expect the humanities to assume that role. And, indeed, there is historical precedent for that role. Our modern university curriculum traces back to a medieval one whose purpose was to better understand God and our place in his universe. The search for meaning was rooted in belief in the deity. Our current social drift traces rather directly to increased secularization and the as yet futile attempt to substitute some other center for God. The Humanities, more so than any other division in the university, accepts as its continuing challenge this search for meaning. Mindful of the accelerating change in our time, the Humanities seek to respond to the particular needs of the peculiar time that is our own, but they do not lose sight of their grounding in the past, for that is our connection to our kind.

The Humanities proceed by reflection and imagination rather than by experimentation, field work, or the building of models. Reflection and imagination require quiet and peace of mind, characteristics oddly out of keeping with the tenor of our times. Rapid action and rapid response seem increasingly the order of the day. Indeed, our military, it is just reported, plans to give troops the drug "speed" in order that they might fight without sleep. We seem as a culture to have adopted the view of the protestors in the 1970's.

During the combined trial of Bobby Seale and the protest against the Vietnam War in New Haven, Yale was in turmoil, and classes met only if professors and students agreed to do so. I was teaching *King Lear* and was stunned by the correlation between Shakespeare's comments on the collapse of a civilization and the events I witnessed just outside my window on the New Haven green. But one of my students argued that instead of reading and discussing,

we should act. "What should we do?" I asked. "I don't know," he replied; "just act." Observing the frenzy of action and the paucity of thought in our country I sometimes have the feeling that my Yalie's impassioned suggestion has been adopted wholesale.

Action is not the province of Humanities. Thinking is. And thinking is not only very hard work: it is devalued in a nation of doers. But action without forethought is like construction without blueprints. The building might go up, but it is likely to be, as Denver's overbuilt office space is, unoccupied. Or it is likely to need extensive renovation before anyone can even move in.

What kind of thinking do we do? Critical thinking. We read literary texts closely and carefully, not as documents filled with factual information, but as living expressions of an artist's response to life.

"Oh, you mean you learn how to live by reading novels and plays. You mean the writer is encapsulating his/her own experience for us so we can profit by it?"

Well, sort of. But that description sounds altogether too much like Arnolphe's list of maxims for Agnes in Molière's comedy, *The School for Wives*. Dutifully intoning the maxims, she reads them in precisely the undifferentiated, disengaged manner of that reader, especially the young reader, who has been taught that literature is "a prescription for life."

Literature, however, always has a subversive effect. Arnolphe's list of maxims backfires. Trying to control Agnes and to form her young innocence into the perfect spouse, he succeeds instead in rousing her indignation and igniting her passion for a man who actually seems to value her mind. Literature seems always to be aware of the power inherent in the apparently powerless: the Agnes in a society dominated by Arnolphes, the forgotten females at the fringes of a male-oriented society, the slaves watching the activities in the big house. Literature looks critically and openly at the society in which we live—and it invites us to look at our world that way, too. Far from being elitist, literature invites all of us—from whatever class, whatever origin—to take a keen look, from varied perspectives—at the world we inhabit. Literature seeks to wake us up, to engage us at the deepest level of our being in our shared life, to notice what has been overlooked by the political propagandists of any given time.

Literature is thus deeply democratic and anti-authoritarian. It deplores secrecy, covert agreements, and thinly-disguised plots to keep the people ill-informed. It ridicules pretentiousness, looks with contempt at the mere acquisition of money, and urges us to celebrate our intellect and our imagination.

The Humanities at their best do not allow students to settle back into smug complacency with personal aesthetic appreciation. The Humanities ask, and move students to ask themselves, how the work of art they have studied alters their perception of the world and how they are going to respond to it. The Humanities ask for a public commitment as well as offering private enjoyment. The critical thinking, careful reading, and esthetic contemplation are

not themselves the end of life, but the necessary activity of the mind before one assumes an active role in the community.

I do not claim that the Humanities always live up to this ideal. Much research in the Humanities is, in my judgment, hopelessly introspective, ignoring the connection to the wider world and pretending that art is really only about itself. Too much criticism is about criticism of the criticism of the work of art.

At its best, however, the Humanities explore the relations between humans and their world in a way that is different from other disciplines. To illustrate how the Humanities, and in particular literature, work, let me use as an example a text I have just been teaching, Ernst Remarque's World War I novel *All Quiet on the Western Front.*[1]

This novel is one of the introductory offerings in a course called "Images of the 20th Century" and team-taught by four members of my department who cover literature, the visual arts, and film. We begin this course on the 20th century not with the year 1900, but with World War I because it is that event that really marks the division between the past century and this one. The novel is not a historical document, though it can be read as one. It is not in this novel that one finds the shocking statistics of this dreadful war: 9 million dead soldiers, another 9 million dead civilians, 7 million wounded, including 2 million permanently disabled. We are almost numbed by such figures in our time; we have heard so many of them.

Remarque does something else, however, than cite figures. He shows us the effect of the war upon a small group of soldiers, particularly upon one, his narrator Paul Baumer. His emotional, physical, and mental response to the war affect us deeply through the novelist's power to enlist our empathic participation. We do not just read *about* World War I; we enter into it vicariously through the process of reading. That interactive process involves us as readers reconstructing the clues of the text in our minds, a process recently studied by theoreticians such as Stanley Fish and Wolfgang Iser.

When we look closely and critically at this text we discover that Remarque shapes our response through carefully selected images that introduce and conclude each chapter. Perhaps the most striking instance of this technique occurs in the next to last chapter with the image of the crater. Throughout the novel Paul has told us about the bomb craters around which and into which he and his comrades crawl in their interminable backwards and forwards movement across the Western Front. By the end of the novel Paul has been fighting on the front for several years, years in which he sees all but one of his comrades die, his youth disintegrate, and his hopes for the future vanish. He moves like an automaton, his emotions deadened by the long, futile months of fighting. He speaks at the chapter's beginning of craters both without and within; i.e., the crater which shapes the field on which he struggles to preserve his life has now become internalized. He feels as if that empty hole formed by violent bomb bursts has now become his emotional self.

> Our thoughts are clay, they are moulded with the changes of the days;—when we are resting they are good; under fire, they are dead. Fields of craters within and without. (p. 271)

Remarque acknowledges the limitations of words to convey the full horror of his experience, but words are all he has, and the image, formed by words, serves as his primary technique to draw in the reader. In order to grasp what the author is saying, the reader must form an image in the mind from the verbal clues provided in the text. It is important to realize that image is not the same as description. The reader is not just picturing the setting. An image involves the reader by affecting his or her emotions and by enlisting his or her full participation in the reconstruction of the text within the mind.

When Paul goes home on leave, he encounters family members and friends whose understanding of the war is so inadequate that they can remark to him, "How's the spirit out there? Excellent, eh?" Lacking either the first-hand experience of the war, or the well-constructed images that enable one to vicariously experience the war, these civilians fall back on the patriotic phrases they have been fed since the war's inception, phrases ludicrously inappropriate. Kantorek, the schoolmaster, had described Paul and his classmates as the Iron Youth, a phrase they recall bitterly as one after another falls.

One of Remarque's objectives in the novel is to dispel the hype and the hypocrisy of the language about war, and to replace those false images perpetrated by the authorities with images that convey the true horror of the actual experience. Returning to the crater image, then, we see Paul in the waning days of the war, numbed and empty, deprived of all his comrades save one, Kat. During another foray at the front, Kat is wounded and Paul carries him on his back to the medical station. The way back is long and difficult, and we feel Paul's agony bearing the weight of another man on his weakened frame. The worst is yet to come, however, for as Paul gently releases his burden the medic tells him he might have spared himself the effort. His friend is dead.

> "Would you like to take his paybook and his things?" the lance-corporal asks me. I nod and he gives them to me. The orderly is mystified. "You are not related, are you?" No, we are not related. No, we are not related. Do I walk? Have I feet still? I raise my eyes, I let them move round, and turn myself with them, one circle, one circle, and I stand in the midst. All is as usual. Only the Militiaman Stanislaus Katczinsky has died.
>
> Then I know nothing more. (p. 291)

Paul's eyes turning round and his self turning with them in "one circle, one circle" show us visually and emotionally that he himself has become the crater. Lost, emptied, lacking any feeling other than that of a great hole, he images not just himself, but, as Remarque says, a whole generation.

In a century marred by bomb craters of ever-greater size, my analogy with

architecture may seem inappropriate. What we have built in our century is destruction, and this brutal fact of our times also makes teaching difficult. We deal in ideals, and it is hard to maintain them in our time. It is hard to sound credible to the young, and not to be simply an obtuse booster for the status quo. We risk sounding like Kantorek, and thereby earning our student's contempt. It is this that creates the generation gap—the older generation describing the present, and the past, in a way that is out of keeping with the students' own experience.

It is no easy task to find the language to describe our century, in a way that is accurate, without being dispirited. And yet our job is to inspirit the young—as we are inspirited by them. In this fall season of new beginnings, in this beautiful place where architecture is a delight to behold, I hold to my metaphor. We are building, whether we acknowledge it or not, and my hope is that we are building a structure that will shine into the future and give hope to generations of students. That task cannot be entrusted just to the well-funded coalition of science, engineering, and business. It takes all of us—social scientists and humanists working together with all of the divisions in the university.

For professors in the humanities to serve not just as equal partners but as guides into the future will take a restoration of confidence and a redirection of research priorities. People in the humanities need to give up some of their narrow parochialism, to stop imitating science in their pursuit of smaller and smaller specialization so that more and more articles may spew forth, to bone up on disciplines outside their own, and to think again about the larger issues confronting our society. The university can assist people in the humanities to offer the leadership that is needed by rewarding them in a way commensurate with the responsibilities expected of them. Instead of paying humanities professors the lowest salaries—in many cases lower than those even in the public schools—the university should recognize that its salary structure reflects its values. Does the university really believe, for instance, that a beginning professor of business is worth twice what a professor of humanities is worth? How can the university justify such salary disparities? Is the marketplace really the best structure on which to pattern ourselves?

Good teachers should not have to become administrators in order to educate their own children. Administration doesn't take hard thinking; teaching does. And those are not my words, but those of the late Yale president and baseball commissioner, Bart Giamatti.[2] Administration facilitates teaching and thinking. That is all it does. Yet we reward administrators as if they were the foundation stone of education. They are not. You could run a school without administrators, but you could not do so without teachers.

The university can also respond to the obvious needs of humanities professors for better classrooms and better offices. As I have pointed out earlier, our architecture tells us much about our educational values. What kind of values are implicit in the fact that we have not had a classroom building in

50 years? We need a new humanities building, not a center in name only, but a physical place in which interdisciplinary work could be encouraged and physically supported.

For too long the humanities have been supported largely by lip service. "Oh yes, the humanities, an essential part of our university." But the words begin to sound as hollow as Kantorek's "Iron Youth" unsupported by any physical evidence in the shape of salaries or space.

The salary disparities from one division of the university to another and the distinction between office and classroom space from one division to another begin to make people feel the humanities really are not as significant as the better rewarded disciplines. I believe that perception of disparity and its significance has contributed to a decline in dialogue between the parts of the university. We need more conversation. We need engineers talking to humanists. We need discussions between the sciences and the humanities, between business, journalism, and the humanities. Without such discussion we risk building an academic edifice that resembles a Rube Goldberg design or something planned by the Dadaists, rather than, say, the integrated architecture of Frank Lloyd Wright.

Our common enemies are ignorance, bigotry, and narrow training. The students we are teaching represent our future, that of our state and our country. Do we want nonquestioning, uncritical technicians who will just keep the system, whatever it is, functioning? Or do we want another generation of free spirits, liberated from the confines of simplistic thinking by knowledge of generations antecedent to their own? How we build for the future depends on our answer to these structural, architectural questions. If we accept the first model as suitable, we continue much in the direction we have been going, without dialogue, with increasing divisions between our parts, with increasing disparities between the salaries and the spaces allotted to the privileged and the patronized within our university. If we accept the second model, we begin at once to correct the errors of the past and to reintegrate the diverse parts of our university. My choice is clearly for the latter, not because I seek more dollars for myself and my colleagues, but because I seek a healthier democracy for my children. I do not want my children and my grandchildren to grow up in a nation controlled by docile technocrats with little empathy for anyone but themselves. I like the feisty, questioning spirit that is the heritage of my country. I want to see a return to the compassion and the spirit of equality that have characterized my country at its best. I want the academic structure of my university to reflect these values and to continue them. To that end I want to see the humanities restored to their rightful position as the cornerstone of the university.

Notes

1. New York: Fawcett, 1958.

2. See Roger Angell's interview in "The Sporting Scene (Baseball)," *The New Yorker* (August 22, 1988), p. 53.

So You Want to Be an Actor . . . Stages of Learning in the University Setting

Joel G. Fink

There once were two young producers in New York who decided to do a production of *Hamlet.* They wanted to do the definitive production of Shakespeare's play and began to audition actors, looking for the ideal Hamlet. They saw hundreds of actors, and not one was what they were looking for. One day, as they were finishing hours and hours of auditions, a little old man stumbled into the back of the theatre and announced in a voice that had a thick eastern European accent, "I want to audition for Hamlet." The two young producers were in no mood for more auditions and they told him that the role of Polonius was already cast. The old man, however, would not be discouraged and insisted that he wanted to audition for Hamlet. Finally, the producers understood that the old man wanted to audition for the role of the Danish prince, and though they could not believe it, they decided it would be easier to let the old man audition than to argue with him. The old man shuffled down the aisle of the theatre and slowly mounted the steps onto the stage. He stepped into the spotlight, began "To be or not to be," and an amazing transformation occurred. Suddenly the two producers saw on the stage their ideal Hamlet. The actor's voice rang out through the theatre and he appeared to have become a young and handsome prince. Finally, having performed all of Hamlet's soliloquies, the actor stopped and walked off the stage back into the theatre, once again a stooped and fragile old man. The two young producers were stunned. Here was the very Hamlet they had been searching for . . . but they could not understand how such a thing could be. They ran up to the old actor and said, "That was terrific, but tell us . . . how did you do that?" The old actor looked at the two youngsters, shook his head sagely, and said, "That's acting." In the article that follows, I would like to share with you some thoughts about acting, and particularly about the teaching of acting in the university setting.

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Most students who think of taking theatre courses think of acting courses. It is logical. It is a very rare student who comes to school as an undergraduate to be a stage manager, a costume technician, or even a director. *Actors* are the people we see when we watch theatre, films and television, and acting is what most students of theatre initially think they want to study. If they are anything like I was, they see acting through the narrow blinders of "a role," a part in a play, a chance to shine. They have not yet begun to think about acting within the larger context of *theatre*, or theatre within the larger social and political contexts within which it is created. Indeed, most go on to study other things. A few, however, discover they have a *talent* and go on with their study. Fewer still find they have the resources to go on to pursue an acting career.

The state of the commercial theatre in America should be enough to discourage any but the most brave or the most foolish from pursuing a career in theatre. Today's commercial theatre is one of roller-skating spectacles and high-tech effects. At any given time, the majority of the professional union, Actors' Equity, is unemployed. The average income for an actor in the union, that is from work as an actor, is between $2,000 and $5,000 per year. Why then will actors face years of probable unemployment—or "temporary" employment as waiters, cab drivers and word processors, in order to pursue a dream? Whether it is a drive, an obsession, or a vision, young actors flock to large urban centers with the hope of getting the breaks they need. But what is it that prepares them to make the most of their "break," if they get it? What certifies that an actor can indeed *act*? Anyone can say, "I am an actor," but what does that mean in the absence of training or experience?

In *Edmond*, a play by David Mamet, there is a scene where the title character confronts a young woman with questions about her career. Having met her in a restaurant where she is waiting tables, he cannot understand her assertion that she is an "actress." His questioning becomes merciless as he forces her to admit she has not been in a show and has no right to call herself anything but a waitress. The scene, though cruel in its presentation, is unsparingly honest in its content. What qualifies someone to be called an "actor"? Of particular interest to us, what is the purpose of actor education and training at the university level?

The study of theatre represents the study of an art that is both complex and collaborative. Within that field the study of acting represents the study of the art of the actor, both as a **process** of creation and an artistic **product.** A significant obstacle to that study is the lack of a consistent base for communication about the processes of acting. Acting is an artistic, not a natural process: the actor creates a flow of actions generated and structured by creative and re-creative processes. Without denying the possible existence and importance of inspiration and natural talent, the actor's artistic skills need to be identified with both conceptual and linguistic clarity. Even the basic terms *theatre* and *acting* can have varied meanings and applications. It would

be useful, therefore, to begin with several definitions to provide a groundwork for this discussion. In addition, these definitions will also help to clarify my particular perspectives, preferences, and prejudices in the field.

Although *theatre* can be looked at as a matrix of other arts, and can be defined in terms of those other arts, it is more useful to define what is essential to theatre and unique to that art form. As Suzanne Langer suggests:

> Drama has so often been described as a synthesis of several or even all arts that its autonomy, its status as a special mode of a great single art, is always in jeopardy.[1]

And Eric Bentley, one of America's most prolific writers on theatre adds:

> Today we should not look for the many things theatre *can* be, we are too far gone for that; we should look for the few things theatre *must* be if it is to live.[2]

In defining theatre, the British director and theorist Peter Brook has written in *The Empty Space* that all that is required for theatre to happen is a person walking across an empty space while someone else is watching.[3] In *Towards a Poor Theatre*, the Polish director Jerzy Grotowski has concurred that by eliminating whatever proves superfluous, no matter how attractive, we are left with theatre defined as the actor-spectator relationship in a direct and live communion.[4]

All of these theorists challenge the notion of theatre as a synthesis of the disparate creative disciplines of literature, sculpture, painting, architecture and lighting. Rather, each has engaged in research to strip away both the trappings of what could be called the "rich" theatre as well as the psychological details of the naturalistic drama of the 19th and 20th centuries. At the heart of this work has been research into the ways and means of the actor.

At the theoretical level, acting has been the object of speculation by aestheticians, psychologists and educators, each with a particular perspective and terminology. At the practical level, acting has a fairly limited history of comprehensive and methodical study.

In the late 19th and early 20th centuries, the Russian actor/director Constantin Stanislavski engaged in what was up to that time the most serious and significant examination of the creative processes involved in the art of acting. His explorations were designed to uncover the principles that governed the actor's access to "the creative state," and his work was an attempt to methodically describe a *craft* of acting. Working primarily with scripts that called for the appearance of "real life" on stage—particularly the plays of Anton Chekov, Stanislavski developed a methodology which was intended to lead the actor to emotional truth created within the given circumstances of a dramatic context. In America, a reduced version of Stanislavski's work became known as "the method," and was particularly associated with Lee Strasberg

and the work of The Actor's Studio in New York. This approach to acting dominated the American theatre until the 1960s, and its misuse was, I believe, responsible for many of our unhealthiest approaches to acting.

Not until the work of Jerzy Grotowski was a vigorous re-examination of the work of the actor undertaken. Grotowski's theatre, The Polish Laboratory Theatre, was dedicated during the 1960s and early 1970s to the methodical exploration of the nature of theatre, and particularly to the development of "the holy actor." Although Grotowski's theatre productions were seen by relatively few people (75 to 100 people were usually allowed to attend a performance), and despite the fact that Grotowski is no longer involved in what we would call "theatre," his research remains a significant influence on today's actor-education and training. Grotowski's work suggested that there are other ways—beyond the psychological—to search for the truth of impulsive life. His training techniques focused on the actor's body, and the breaking down of resistances that block the actor's *natural* responsiveness and creativity. Again, to quote Peter Brook, who has been influenced by the work of Grotowski:

> Acting begins with a tiny inner movement so slight that it is almost completely invisible. . . . What happens? I make a proposition to an actor's imagination such as, "She is leaving you." At this moment deep in him a subtle movement occurs, not only in actors—the movement occurs in anyone, but in most non-actors the movement is too slight to manifest itself in any way: the actor is a more sensitive instrument and in him the tremor is detected.[5]

Three Stages of Process

The question I come back to is **how** is this tiny movement nurtured and manifested? In my work in theatre education and training, I have conceptualized the processes of the actor into three stages, which I have modestly called **Fink's Taxonomy of Acting.** The first stage of the actor's work I have labeled the **pre-craft level of acting.** This stage focuses on the creative processes of the person before assuming the role of "an actor," and it involves the coming together of the actor's life experience and theatre education in bringing *personal significance* to the *shared meaning* of a text.

Most researchers in the field of creativity have recognized that when freed from defenses and distortions, our energies move naturally toward self-fulfillment and self-realization. In this process, the incorporation of experience into the dynamic elements of personality is the aspect of development which I will call **personalization.** It is this process of personalization that I understand as the basis of the learning structure in the work of the actor, at all taxonomic levels and particularly at the pre-craft level. In reality, of course, many factors limit the potentials of individual growth. From my perspective, however, all aesthetic experience presupposes the process of personalization. The knowledge and experience needed by an artist is the

personalized understanding which relates actual experience to possible experience through the artist's emotions, thoughts and actions, all stimulated by the imagination.

The second stage of the actor's work I have labeled **craft/technique.** These terms used together refer to the learned skills of the actor's art. While the first stage can be viewed as preparation, this period is one of actual creation—of general skills or particular effects. This could be thought of as the actor's mastery of a general "alphabet" of communication, or in working on a play, the learning of the particular score of a role. It is, of course, technique that paradoxically allows the freedom of artistic expression through the rigours of artistic discipline.

This need for artistic discipline has sometimes been overlooked and the artist has too often been identified as an unpredictable, necessarily unstable and insecure personality. The delicate balance necessary for personal growth and artistic achievement has been confused with the precarious balance of the neurotic, and the rigid imbalance of the psychotic. My work, however, is based on the belief that the basis for any significant understanding of creativity must come from the approach of mental health, not mental illness. The creative potential of an artist is inevitably reduced by the limiting influences of the neurosis in the personality complex of that artist. These distortions may be interesting and even fascinating as manifest in the work of the artist; however, they are eventually crippling and distorting to the continued growth of the artist. The commitment to creativity which yields *art*, begins with the processes of personalization which yield *self.* The artist must be strong enough and healthy enough to bear talent and to shape it through craft, until that talent can bear the fruit of creation in the third stage of the actor's work, which I have labeled **performance.**

In the performance dimension of the structure of acting, the presence of the *audience* is the vital new component in the creative matrix of the theatre event. At the performance level the focus tends to shift to *product*, though *process* remains the vital underlying energy. The primary laboratory for this level of work happens on-stage in actual production experiences.

Working from this three-level structure of pre-craft, craft/technique and performance, I define theatre *training* as the development of the actor's instrument to a level of sensitization that allows that movement—that tiny inner movement that Peter Brook mentions—to be shaped through the actor's craft, and to be communicated to an audience. I then define theatre *education* as the development of the actor's instrument to a level of contextual awareness and sensitization that allows that movement, shaped through the actor's craft, to have meaning and, more importantly, significance within its target community.

The Studio Environment

In the studio classroom, both training and education can come together at all three of these taxonomic levels in the creative process of acting. From

a focus on the person of the actor and an emphasis on process through to the performance event, the studio provides a laboratory for exploration and discovery. Paralleled by the work of rehearsals for a specific production, the studio is the actor's gymnasium, where artistic "muscles" can be tested, strengthened, and made more flexible. Most actors and directors know the joy of studio work and the intensity and depth of the work that can be done there. In the studio all three dimensions in the structure of acting collaborate towards the goal of *theatre*, with the assumption that great performances are the essence of great theatre.

As the opportunities for actors working in live theatre become more and more restricted, the opportunities to learn "on the boards," by actually working in the theatre, become less and less possible. Where does a young actor go to get experience playing the Greeks, Shakespeare, Molière, Chekov, Beckett? As the possibilities for meaningful apprenticeships and internships dwindle, the training grounds for America's young actors have more and more become university campuses and theatres. The traditional split between academic and professional theatres has in many ways been breached by the economic necessities of the 1970s and 1980s. Whether at the undergraduate or the graduate level, universities have become responsible for much of the significant theatre work being done in this country. Although conservatories associated with working theatres such as the Guthrie Theatre, the American Conservatory Theatre or the Denver Center Theatre are exciting professional programs, they can offer admission only to small numbers of young actors. In addition, the decentralization of our theatre from its traditional New York home, as well as the economic necessities of contemporary production find many of today's most significant theatre artists working with university students within university settings. This interaction brings with it both potentials and problems for those committed to the university theatre community, and again raises the question: "How can we nurture talent and develop the structure and strength of craft in creative young artists?"

Having taught in several professional training programs, I have come to the belief that most actors are ready for in-depth theatre *training* in their early twenties. At that time (given the differences of a few years for each individual), the personality is sufficiently settled to allow significant training demands on the actor's instrument, the self, to be understood and integrated into the existing personality. What does this mean for studio training at the undergraduate level? As I have tried to indicate, I see undergraduate studio courses in the university setting as both training and education. I see the purpose of the studio at this level as preparation of the ground for future study through the learning of the basic concepts that inform the actor's art. It is not the goal of the undergraduate studio to send out actors who believe that they have a finished technique, but rather to send out young artists who are now capable of learning technique, because they are capable of *thinking*. Not to say that we should not be teaching "how to do," but our *hows* must be

balanced with *whys* and *wherefores* if we are to be more than career-training trade schools. Ideally, the undergraduate studio should provide a setting where the education of the classroom and the training of on-stage performance can meet in an understanding of *process*. Studio courses offer the student a chance to explore a deeper sense of personal responsibility in learning, often in smaller-sized classes, with a sense of *community* as it relates to both learning and art. Perhaps it is impossible to teach talent. Perhaps we can only make it welcome and encourage its release into the world. Whether our students go on to pursue theatre as a career, as a hobby, or as an audience, the studio is a place where *learning-about* meets *learning-to-do*.

The Process of Learning

In the education and training of actors, a program which primarily focuses on details of craft can lead to a rote-learning of technique without an understanding of *underlying structure*. For many years actors were warned about "thinking too much" and over-intellectualizing. Although the danger of becoming a "head" actor is real, too many actors have been trained as Pavlovian puppets rather than creative artists. In his book *The Process of Education*, Jerome Bruner describes the process of **nonspecific transfer** as the heart of education.[6] This transfer of principles and attitudes allows a continuity and maturation of learning essential to the personalization processes I have discussed in the work of the actor. In addition, in trying to identify and define the underlying structure of eductional goals in theatre education and training, I have found a useful conceptual approach in Benjamin Bloom's *Taxonomy of Educational Objectives*.[7] Bloom's three domains—(1) Cognitive, (2) Psychomotor, and (3) Affective—are effective tools in the analysis of all aspects of theatre education and training.

In the *cognitive* domain are theatre courses in history, literature, theory and criticism. These course are usually thought of as the *education* part of theatre education. Most craft classes, classes focused on the vocal and physical aspects of technique, fall into the *psychomotor* domain of educational objectives. These classes are usually *training* classes. The "what" outweighs the "why," and without adequate structure and planning, these courses can easily become little more than vocal and physical calisthenics that encourage the student to put the mind to sleep. Acting classes, particularly in the school of the American "Method," have almost exclusively stressed the *affective* domain, with stimulation of the actor's emotions being the primary goal. This, unfortunately, has reduced many acting classes to the equivalent of emotional self-abuse, with an unhealthy focus on past experiences as substitutes for immediate impulsive reponses.

Is it possible to understand the acting studio as a classroom in which problem solving and the acquisition of knowledge can be approached through all three of Bloom's domains of educational objectives? As a student, most of

my early classes in acting were buried in a haze. I never knew quite *what* was being asked for, and knew even less *why*. I remember for years being haunted by a sense that I was somehow a fraud, because I had managed to pull off another performance without knowing *how*. At that time I had not yet begun to *think* as an artist, and I was at the mercy of talent and inspiration. At that time, I had no idea that I was responsible for my art. Perhaps it is this concept of *responsibility*—both for what was being said and how it was being said—that was the key to my beginning to move towards creative maturity. What a difficult concept this is for a young actor, eager for work, and seemingly powerless in choosing the plays that are done or how they are done. But without this sense of responsibility, acting is just pretending, and actors are just "players."

In a recent television program about the Russian Circus, one of the artists spoke of the importance of the performer's soul. Everyone, he said, has a soul; but if the soul is sleeping, the performer cannot be an artist. Whether we call it soul or conscience, presence or awareness, it is in the deepest sense the *being* of the actor that must be brought to the work of acting.

Theatre's Place in the World

In Czechoslovakia, in Poland, in Chile, in South Africa, in every country in the world where politics are a potent part of everyday life, the theatre is a source of energy and strength. A society that fosters the concept of theatre only as entertainment, however, makes the concept of theatre education trivial and frivolous. When theatre is viewed as a vital form of nourishment in society, theatre education becomes a meaningful component of a liberal arts education. I believe that theatre education, and in a broader context, arts education, offers ways of problem-solving, ways of knowing, and to quote the theorist Nelson Goodman, "ways of worldmaking"[8] that are unique and essential.

The potential of the acting studio is the creation of an environment in which a young actor can find out not only how to say "To be or not to be . . .," but *why* it needs to be said, and said in that way. To find where Shakespeare's Hamlet and the actor's Hamlet meet is a matter of both training and education. It is in the studio classroom that the many things that theatre "can be" can be examined through the search for what theatre "must be." In the studio, a young actor can "speak the speech" and discover the actions of Roman rulers, Tudor monarchs, and Russian serfs. In the plays of Athol Fugard or Vaclav Havel, our students can understand the real pain and suffering of the South African or Czechoslovakian people, and the complex issues involved in their political struggles. Working like an archaeologist, the actor digs under the surface layers of the words to find emotional and intellectual expression through sound and movement. Knowing becomes entwined with doing, and the act of *remembering* becomes a present-tense act of growth.

In Carson McCullers' play, *The Member of the Wedding*, Frankie, a young tomboy, is excited by the prospect of her brother's wedding. She realizes that when her brother Jarvis and his bride Janice go away after the wedding, she wants to go away with them. She tells her young friend, John Henry:

> The trouble with me is that for a long time I have been just an "I" person. All other people can say "we." . . . All people belong to a "we" except me. . . . Not to belong to a "we" makes you too lonesome. Until this afternoon I didn't have a "we," but now after seeing Jarvis and Janice I suddenly realize something. . . . I know that the bride and my brother are the "we" of me. . . . I love the two of them so much and we belong to be together. I love the two of them so much because they are the *we* of me.[9]

Perhaps for some of us, *theatre* is the "we of me," the way we speak best and most clearly about the world we see and the way we relate to it. Perhaps at a time when we have lost and are losing so many artists with their dreams and their visions to the tragedy of AIDS, we have an even greater responsibility to create in our work with student artists, for each of them, the *we of me*.

Notes

1. Suzanne Langer, *Feeling and Form* (New York: Charles Scribner's Sons, 1953), p. 321.
2. Eric Bentley, *In Search of Theater* (New York: Vintage, 1947), p. ix.
3. Peter Brook, *The Empty Space* (New York: Atheneum, 1968), p. 9.
4. Jerzy Grotowski, *Towards a Poor Theatre* (New York: Simon and Schuster, 1968), pp. 28-32.
5. Peter Brook, *The Empty Space*, p. 109.
6. Jerome Bruner, *The Process of Education* (New York: Vintage, 1960), pp. 17-32.
7. For Bloom's summary of these domains, see Benjamin S. Bloom, David Krathwohl and Bertram B. Masia, *Taxonomy of Educational Objectives: The Classification of Educational Goals, Handbook II* (New York: David McKay, 1964).
8. Nelson Goodman, *Ways of Worldmaking* (Indianapolis: Hackett, 1978).
9. Carson McCullers, *The Member of the Wedding* (New York: New Directions, 1951).

Facilitating Discussion

R. G. Billingsley

Teachers are often urged to shift their classroom approach more toward discussion or to set aside specific periods for discussion. And yet they often find when they do so that the "discussion" turns into a painfully tedious activity with students who are forbiddingly silent and unresponsive or who give brief and wooden responses. Such "discussions" often result in the teacher's lecturing in much the same fashion he or she has done before, posing, as well as answering, a set of preselected questions.

How can we avoid such deadly activities in our own classrooms? What must we do to have discussions that are really lively and fruitful? It seems to me that it is not enough simply to learn a number of specific discussion techniques; we must also look at our fundamental convictions about teaching and learning. Discussion takes place within the larger framework of the instructor's overall pedagogical assumptions and is shaped by those assumptions. If they are inadequate, any attempt at conducting discussions will be correspondingly weakened. In this essay I will deal first with the issue of adequate preparation in terms of general assumptions about learning and teaching, then offer a specific definition of discussion as well as techniques that follow from the general assumptions articulated in **Part I.**

Part I. General Assumptions about Learning and Teaching

We know that teaching is a humane art. It is done with people. Yet a variety of observers continue to report that teaching is all too often centered on a specific curriculum, or lesson plan, examination, text book, or even that "holiest of grails," a specific subject rather than the living student sitting in the classroom. Teaching must first, foremost, and always remain focused on students and their growth. Thus the questions we may ask ourselves every day, the questions that should direct all of our activities are: *Will this promote the growth of my students? Do I know what growth is? Do I know what kinds of growth I want?* When we have very specific answers to these questions, it is much easier to select a textbook, design a syllabus, fashion an examination, and conduct a discussion effectively.

We may not all agree on exactly what growth means, nor is it necessary

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that we do. What is essential for us as individual teachers is that we seriously and continuously query ourselves on this issue, and that we measure not only the student's performance but our own by this criterion.

In my experience, the surest and most effective way to keep yourself aimed at the target of student growth is to remember one essential concept: Learning and education start with a question.

People Learn When They Have Questions They Want Answered. The question is the heart of the educational experience. It is the engine that drives the process of learning. All of us can recall those moments, either as students or teachers, when the classroom was transformed into a very exciting arena through intense student engagement with a compelling question. And when a *living* question that seems relevant to the students is not present, real education is not present. Things may get memorized and mechanically filed in notebooks, but the exciting and transforming activity that drew all of us to teaching is not taking place.

A compelling question that transforms the classroom is hard to anticipate. We know what questions are engaging for us, but we can never be sure about our students. We have to be sensitive to areas of student-teacher differences so that we can make appropriate adjustments. Also, we must be aware that our questions may satisfy a number of different growth objectives. Meridith Gall (Gall and Gall 1976) lists four types of instructional objectives that can be pursued in discussion: subject-matter mastery, issue-orientation, moral development, and problem solving. When we are fully cognizant of our objectives, we can most effectively select the questions or issues that can engage our students.

Teaching Involves Overcoming a Paradox. It seems to me that by the very nature of the enterprise, teachers are caught in a difficult paradox that needs to be taken into account. Basically, the teaching performance rests on a paradox because first the teacher must try to set high standards of performance so that students can achieve the maximum possible growth, which can be very intimidating to students. At the same time, it is necessary to create a comfortable environment that nurtures student self-confidence. We have long suspected that anxiety has a negative effect on learning. The work of Sieber (1977) appears to confirm this suspicion. Anxiety seems specifically to impair attention on the ability to remember (Wittrock 1978). All of us have seen students so frozen that they cannot relate facts we know they possess. They are so terrified they can hardly even tell you their names. Such students are not thinking about the subject; they are worrying about defending themselves. Clearly, for such a person a discussion period is a total loss.

So what is the teacher to do? How do you make great demands on students and simultaneously enhance their sense of security and comfort? Logically it seems impossible. But fortunately, as with so many other paradoxes, what might not seem possible in logic, is quite possible in fact. Witness parents

who lovingly perform these two acts with their children day after day. We teachers must and can do the same thing. We can do it much more easily and more effectively if we are fully aware of the seemingly contradictory nature of our work. Still it requires great sensitivity on our parts to fulfill both functions without one cancelling the other out. We must constantly push students toward higher levels of achievement while simultaneously providing a safe, encouraging, and supportive environment for them.

Remember the Gap Between What Is Taught and What Is Learned. When we spend a lot of time carefully designing a syllabus or preparing a particular lesson, it is easy to fall into the illusion that our effort is matched by a comparable amount of learning. After all, I "covered" that material. I "taught" that last week. It is necessary to remind ourselves constantly that it doesn't matter what we *taught.* What counts is what students *learned.* In the gap between the two lie thousands of student dropouts and hundreds of thousands of bored students who have learned, at most, how to second-guess the instructor and write hastily memorized material on an exam paper.

Failure to remember the gap between what is taught and what is learned is particularly a problem for those instructors who feel that they are teaching "subject matter": "I teach subject matter, I do not teach students." It seems to me that it is a false dichotomy, in any case. Subject matter takes on value as it is related to human lives. Each should animate the other. The point is to close the gap, to make a meaningful connection between subject and student, between what is taught and what is learned.

As we remember that what we taught may not have been learned, we are compelled to solicit different kinds of feedback so that we can adjust our teaching performance. In particular, one more vigilantly reads students' faces when lecturing or conducting discussion, in order to measure their intake. Those faces can provide fairly reliable guides to comprehension. We become more aware that their incomprehension may sometimes indicate our lack of clarity rather than their low intelligence.

We need constantly to ask our students, "Is that question clear? Do you understand what I am asking you?" Anyone who has observed much teaching realizes that not only questions, but also many statements made by teachers are totally incomprehensible, although, to the teacher, they are crystal clear. The more we think about the gap between teaching and learning, the more we realize that our performances often are not as coherent and clear as we would like. The students are trying, often unsuccessfully, to read us just as we must try in our questions and more formal examinations to read them. It is sobering to think how bright they would think we were if they judged us on our ability to communicate. Yet when we test them, that is how we judge them.

Thus, in the area of student testing, there is also often a gap that requires caution and humility on our part. For example, are we really discovering how

little a student has learned, or are we simply looking at the inadequacy of our own instruments of evaluation? I do not think these gaps between what is taught and what is learned, or between what students reveal on a test and how much they actually know, will ever be completely eliminated. However, we can diminish them by being continuously aware that they exist and by conscientiously working to reduce them. Perhaps of equal importance, we will inevitably be more circumspect and gentle in handling students as long as we are aware of the inherent limitations of our art.

Students Learn from Behavior. We like to think that we are conveying the techniques and contents of a particular discipline, such as literature or physics and, indeed, that may be our ostensible subject. But, in fact, what we are primarily teaching are our patterns of behavior. As Bandura (1976) and Eelen and D'Ydewalle (1976) have demonstrated, learning from observing behavior can be very extensive. Far more than many teachers realize, students may *learn* behavior modeled in front of them more completely than any particular content. Your teaching performance clearly conveys your sense of the discipline, the joy you have for learning in general and that subject in particular, your attitudes toward students, and your expectations, values, and views of the world. It is extraordinarily important to bear this in mind. The subject you teach cannot be separated from your performance in front of the students. Like it or not, you are teaching, in part, yourself. Thus it is essential to reflect on the ways in which your gestures, voice, chalkboard techniques, and entire mode of performing conveys ideas and values. It is by no means an exaggeration to say that, what they see is what they get.

Teacher behavior is especially crucial in discussion situations because they are contingent on a premise, usually unstated, of equality among participants. In trying to answer the question, *"What are the necessary and sufficient logical conditions for saying that people are engaged in the discussion of something?"* Bridges (1979) postulates:

1. They are putting forward more than one point of view upon a subject.
2. They are at least disposed to examine and to be responsive to the different points of view put forward.
3. They intend to develop their knowledge, understanding and/or judgment on the matter under discussion (p. 16).

All three of these conditions demand that the discussion leader consistently *demonstrate* a belief in the equality and value of all participants in the group.

Concrete and Specific Examples Are Necessary. All disciplines that we teach are formed around a coherent core of ideas. These ideas are largely abstractions, and they often appear to be particularly recondite to beginning students. Both you and the student need the framework of abstractions that constitute the skeleton, so to speak, of the discipline. However, the students have an equally strong need for specific concrete examples to flesh out those abstractions in order to demonstrate how they work in real life, in *their* lives.

If the learning presentation is going to engage the student fully it has to meet both the need for abstraction and the need for concretion.

You should *always immediately* tie any idea you present to a concrete example, preferably an example that can be received aurally, visually, and kinesthetically. I once saw a psychology teacher lecturing on the subject of tension. In order to make the subject more real, she held up her hand in front of the students and then slowly closed it into a fist. She asked them to do the same and then said, "Now squeeze down as hard as you can on that fist and hold it." After a wait of about ten seconds she said, "Continue to hold it, imagine that one more stressful thing comes into your life, generating even more tension . . . squeeze even more tightly." After another five-second wait the students were told to open their hands. The compressed fist provided a visual and kinesthetic experience of tension. The release gave the opposite experience of release and relaxation. It was obvious that the instructor's concepts about tension were more fully and experientially incorporated by the students. We need to look for similar specific examples to demonstrate the ideas that we introduce to our students. Soliciting such concrete personal examples from discussion participants is especially effective.

Students Are Strengthened by Acceptance. This may be the most important concept in this essay. Ideally our students glean from us valuable information, useful analytical tools, and meaningful values. What we often do not take into consideration is a factor that underlies—and is more important than—what we teach. We must consciously strive to strengthen the student by helping to develop a positive self-image and an increasing sense of her capabilities.

Without the belief that she can achieve, the student is permanently disabled, no matter how extensively gifted or broadly educated she may be from an objective standpoint. All of her gifts go for naught if she does not really believe herself capable of using them. Teachers are obviously in a critical position to advance or retard self-esteem. Once we have accepted that principle, the most important thing we need to remember is this: *all students are all right.*

This means that we always accept students and we continually let them know that we do. This acceptance can be difficult to convey because our concern for academic growth requires that we be critical of learning performance. However, we can be both supportive and constructively critical as long as we remember that the students are not the narrow spectrum of the academic behavior being observed and graded.

The behavior that we grade is just a part of them. While we may not always find the behavior all right, *they* are always all right. We never cease to accept them as valued individuals. A "C" or "D" student is always regarded and treated as an "A" person. We must demonstrate to students our belief that they can achieve not only because they are gifted and have unknown talents, but, as people, they are inherently valuable.

This may seem obvious but, like many of our deeper held values, under the pressures of daily life, it can easily slip from our grasp.

Part II: Techniques for Facilitating Discussion

The six points developed in **Part I** are all aimed at increasing our awareness of how to provide a learning environment that stimulates the students' questioning process. The importance of students having questions that they sincerely want answered is probably nowhere more evident than in a discussion. Discussions really come *alive* when students want answers and when it is safe to explore possibilities, i.e., when there is no "right" answer that they must discover.

At this point, it becomes necessary to define briefly what is meant by discussion. Perhaps the best review of the literature on questioning and discussion is provided by J.T. Dillon. He makes it clear that it is important to discriminate between *recitation* where students 'recite' what they already know or are coming to know through the *questioning*, and *discussion* in which teacher and students "discuss" what they don't know (1984, pp. 50-51). Further distinctions are offered by Gall, who characterizes recitation as a playback of information from student to teacher and discussion as basically an interchange between students involving sophisticated thinking and the possibility of attitude changes (Gall and Gall 1976, p. 168). The following remarks are based on the definitions of discussion offered above by Dillon and Gall.

A discussion is a group process. It is essentially a voyage of discovery undertaken by informed equals. Any time you are working with more than one student you are engaged in a group process, but the dynamics of that process are quite different when you shift from a lecture to a discussion. A discussion is no longer a simple back-and-forth communication between teacher and student. With discussion, where the objective is to elicit a variety of points of view, the number of combinations of exchange are potentially infinite; part of your job as discussion leader is to enlarge the number of these possibilities. You are trying to maximize the sharing of ideas and experiences. You want to create as many different combinations of exchange as possible. How is this accomplished?

Build Comfort and Trust. People in groups will give to one another when they feel comfortable and trusting. This seems obvious, yet all too often teachers attempt to initiate discussion without consciously trying to create an atmosphere in which meaningful discussion is possible, i.e., an environment of comfort and trust.

George Prince (1970) finds it useful to assume that each participant in a group unconsciously perceives the gathering as a competition; if someone else wins, he will lose. To the extent that Prince is correct, your job is to demonstrate a win/win model. You must show that no one's ego will be damaged, that energy will be directed only toward solving the problem under

discussion, and that not only does no one lose, but everyone wins. A number of specific practices can contribute to the establishment of a win/win atmosphere.

1. Have the students meet one another. Make sure that they learn each other's first and last names. If the group is larger than 10-12 have them meet 4-5 people in their immediate environment. Start to build a community of trusting friends in the classroom. In addition to names, ask them to learn home town, hobbies, and special interests of one another.
2. Go around the room and check to make sure that they have learned some of these things. Let them tell you about each other. If handled correctly, this will initiate a number of friendships or at least more trusting, casual relationships. Additionally, this information can be very helpful to you as discussion leader. It can allow you to personalize questions in ways that makes them more meaningful and easier to handle for individual students.
3. Make a seating chart so that you can immediately address students by their first names. Find out if they have nicknames that they prefer.
4. Arrange the group in a **circle.** The circular format changes the dynamics of the group immediately, because it gives everyone access to everyone else. Above all, it de-emphasizes your role as the teacher; the students can start to assume responsibility by sharing the leadership of the group with the instructor. You are having a discussion precisely because you want them to practice assuming such responsibility and because you believe that all have something important to contribute. A circular arrangement tends to reinforce this idea. It prevents any single individual from automatically and continuously being the focal point. It is inherently democratic and participatory.

I have to remind myself constantly that I am trying to engage the students with one another, not with myself. I must remember to de-emphasize myself because the students need to practice thinking, too. During most of their academic lives they have been watching the teacher think. This is *their* chance to think in a friendly, yet analytical environment of equals. As much as possible, stay out of their way.

Get People to Listen. Often we think we are listening to others, when actually we are just waiting for them to finish so that we can get in our ideas. In his exceptionally lucid discussion of the conditions necessary for effective discussion, Bridges (1979, pp. 21-26) stresses openness as a vital element. We need to be sure that we are truly open and attentive to the other participants in the group. Real openness is especially characterized by the capacity to listen effectively. Good listening is essential to effective discussion; it makes genuine exchange and comparison possible and creates a sense of closeness and excitement about shared learning.

You can encourage good listening by frequently asking students who are poised to respond, first to paraphrase the remarks of the preceding speaker. They must not only paraphrase, but they must paraphrase to the satisfaction of that preceding speaker. Only when the first speaker is willing to say, "Yes, that is what I meant," does the second speaker get to make this point. This simple tactic can be very effective in terms of really engaging people with one another; it is particularly effective in developing precise and meaningful exchanges of ideas and feelings. You will come to appreciate this strategy when you see students continuing to discuss with one another even after class.

Because this is often a rather time-consuming technique, it is easiest to use in small groups. If the group meets frequently, students will quickly grow accustomed to habits of openness and close listening, and you will not need to request that they paraphrase one another very often.

Your emphasis on close listening can be somewhat intrusive, at least initially. But it is an essential part of your role, as discussion leader, to provide the framework that makes discussion possible. Your concern with facilitating the process of exchange rather than determining right and wrong answers will serve to reduce your position as a feared authority figure. In addition to your function listed above, you support the discussion process by:

1. Clearly and consistently articulating the values of decorum, openness, equality, and mutual respect.
2. When appropriate, orally clarifying and summarizing developing conflicts and ideas.
3. Using the blackboard or other audio-visual devices to help identify developing positions and ideas.

Give Them Some Tools. What are the differences between a bull session and a discussion? One of the main differences is that people in a discussion proceed in a way that allows them to explore a question effectively. This is where a good teacher can really be invaluable. In order for students to respond in perceptive and effective ways, they need some analytical tools and shared vocabulary. Either during previous class sessions or at the beginning of the discussion you should provide the necessary ideas and critical terms from your discipline that make precise and systematic analysis possible. Give them a set of tools and then make way for discovery.

In my own field of American literature, there are a number of critical concepts that can be given to students and that can be employed with reasonable effectiveness almost immediately. I may ask them to keep in mind certain formal categories such as symbols, irony, foreshadowing, plot conflicts, point of view, recurrent ideas, and details of characterization. Or I may offer definitions of specific literary models such as tragedies, comedies, or epics. With some literary works it is helpful to give students rudimentary explanations of archetypal or historical patterns. They often respond well to psychological models such as those offered by Carl Jung or Sigmund Freud. Freudian

interpretations of *Hamlet* invariably elicit lively exchanges, which can be disciplined by the shared vocabulary and conceptual framework most of us recognize when we hear such terms as id, ego, libido, unconscious, Oedipus complex, etc.

The use of such discipline-specific concepts and vocabulary offers a boundary for the discussion but need not constrain it, so long as the leader makes it clear that the objective is honest exchange and discovery. Students remain free to respond to the subject, whatever it may be, in ways that seem relevant to them, while simultaneously using analytical tools to draw precise conclusions they can share with others.

Help Students Explore the Question. As indicated initially, the heart of the educational process is a question. Yet determining the question can be very difficult. Even though the desire to have a particular question answered usually provides the energy that drives learning and discussion, the way the question is explored is of critical importance. Questioning can actually be counterproductive. Dillon (1978) points out the potential danger of direct questioning in discussion. Such questioning can quickly turn the discussion into a session in which students feel constrained to come up with specific, "right" answers. He explains: "The rule of thumb during discussion is not to ask questions but to use various alternative techniques. The notion is that alternatives will foster discussion processes, whereas questions will foil discussion by turning it into a recitation" (1984, p. 55). So the challenge becomes not only one of posing, or even better, eliciting a significant question, but also of keeping that question and related ones alive.

I find especially significant Dillon's report that discussions are kept alive at least as much with statements as with questions. He offers a list of seven alternatives to questioning that seem to stimulate discussion:

1. Make a declarative statement (for example, give an opinion).
2. Make a reflective restatement (give the sense of what the student has said).
3. Describe his or her state of mind ("I'm sorry, I'm not quite getting your point").
4. Invite the student to elaborate ("I'd like to hear more of your views on that").
5. Encourage the student to ask questions.
6. Encourage other students to ask questions.
7. Maintain deliberate, appreciative silence (until the student resumes or another enters into the discussion) (Dillon 1984, p. 55).

In my experience the seven strategies listed above, when utilized in an environment of comfort and trust, are very effective. Point seven warrants particular attention because I think it is the most difficult for many teachers to follow. Once a provocative question is on the floor you have to be willing to wait a moment for a response. Often inexperienced and nervous discussion leaders never really give students a chance to reflect. They will often rush

from one question to the next without pausing for as long as ten seconds between questions. The work of Swift and Gooding (1983) illustrates that when teachers wait for periods as short as 2-3 seconds after asking a question, the quality and quantity of student response improve markedly. Watch yourself to see if you are actually giving students time to think about the question. Ask yourself the following questions:

1. How comfortable is the group? Have I really worked at making them comfortable with me and with one another?
2. How secure is the person I am addressing? Is it necessary to ask a direct question or might I try some alternative approach?
3. What do I know about the person I am addressing? Is there anything in their background or interest to which I could relate the query?
4. Am I constantly scanning the faces of silent students to see if they are engaged and thus might comfortably enter the discussion if called upon?
5. After waiting an appropriate period of time without getting a response do I rephrase my statements or questions? Do I check with students to make sure my remarks or those of others who are speaking are clear? Frequently, lack of response simply reflects lack of comprehension. Teacher questions are sometimes posed from a perspective of extensive knowledge that assumes equal knowledge on the part of students. Make sure that the question is clear to them.

Be Willing to Trust the Process. Remember this is a discussion, i.e., it is a *group* activity. You have to be sensitive to where the group wants to go. Often your students will be 20 or more years younger than you are, so you will have to listen carefully to find a common ground on which you can meet. But you have a discussion only because you are sure there is some common ground and that group interaction is the source of significant insights. By respecting that, you can relax with the knowledge that the students' questions are important and that, with appropriate guidance, most of their conclusions will be valuable. Be willing to trust the process.

In specific terms, trusting the discussion process means that you are able to:

1. allow "wrong" or unexpected ideas on the floor. In my opinion the teacher should rarely say to a student "that's wrong";
2. step back and don't lecture, except very judiciously. This is their opportunity to practice thinking—you have already had your turn;
3. point them to the text (or appropriate course materials) and to their own experience for answers.

To elaborate on point one, in the exposed environment of small group discussion, not allowing a "wrong" response can be very harmful to student security and self-esteem. Rather, one should say, "Well yes, that is certainly one perspective, but is it true in a real situation such as. . . ." or "Could you explain that idea in further detail and give me a concrete example where it works that way?" or "Does that seem to be consistent with what we learned

earlier? Could you show us how?" Erroneous or negative ideas should certainly be confronted but always with sensitivity for the student's sense of self-esteem and always with the awareness that you may not really be understanding what the student is saying. Ask for clarification. You may be dealing with a very perceptive but poorly expressed idea. Ideally you encourage other students to challenge and clarify all ideas which are submitted to the group whether they seem erroneous or extremely profound. One of the key advantages of a discussion is that most often the most memorable critique usually comes from one's peers, perhaps not the most precise or articulate, but the most memorable, the one that students will carry with them out of the classroom.

In allowing the group to go its own way you may find that it has departed dramatically from your course, your subject matter, your agenda. In my opinion you have to be willing, in the short run, to live with that. It is one of the risks entailed in a discussion. One valuable result that you can always achieve, no matter how far afield the discussion seems to go, is this: *The trust and comfort essential to subsequent effective discussions can be firmly established.* Of course, even though you strive to make your role a subtle one, it remains nevertheless a critical one. As discussion leader, you can steer the class back toward the most appropriate topics of discussion when you can do so without violating the healthy group dynamics discussed above.

It is important to remember the additional skills you are developing in students through the use of discussion, for these sessions are part of a total learning program. You will see not only a growing sense of trust and cooperation but also that students are learning how to help one another, which means that you will see them learning how to teach. Thus they experience the joy of sharing while also reaping the benefit that all teachers experience, the sense of mastery over a subject that comes through successfully teaching it to someone else.

Discussion Is Greater Than the Sum of Its Parts. As you practice facilitating discussion with regularity and a sense of confidence, you will discover that it provides a powerful opportunity to foster student enthusiasm and student growth. Discussion is active and participatory, and group members stimulating one another can produce a dynamic and rich environment. You will see students whom you previously thought of as dull and mediocre really blossom when given the opportunity to participate in a safe, supportive, and stimulating discussion.

As suggested above, part of the value of discussion rests in the advantage of utilizing the energy and intelligence of many minds rather than one. But conversely, successful discussion is enormously valuable because it fully engages the individual student, giving him or her the chance to select issues of personal interest and providing an arena in which contending ideas can be observed and engaged. And most importantly the discussion format fully

respects the student by encouraging him to develop and articulate an independent judgment, certainly one of the highest goals of any educational system.

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Ways of Knowing

David Hawkins

I recall some nice academic wit from a great human being, Leo Szilard. As a physicist he was the one who first solved the riddle of the Maxwell Demon and was one of the very first to foresee and be deeply involved in defining the dangers and opportunities of the nuclear age. Before that, as a refugee himself and as a man of action and compassion, he had managed to help save many others from Nazi annihilation.

Just after World War II, when he was being considered for the position of Dean of Science at the newly created Brandeis University, Szilard proposed (he once told me) an admissions test for undergraduates which he called a "stupidity" test. This was a test which did not measure what applicants knew, but rather it measured the *difference* between what they knew and what they thought they knew. Low scores, ideally zero, would qualify them for college admission. Being both a wit and a good statistician, he observed that in such matters this criterion would minimize competition with the Ivy League. In the end he went instead to the University of Chicago, and I don't think his proposal was ever snapped up by anyone. Perhaps it should be revived and offered to ETS for implementation. In the meantime it may be valuable to look at the idea a little more closely. So I begin by asking: Just how could anyone, youth or sage, achieve low scores on such a test?

Of course almost everyone at times tends to act knowing, or at least to be unaware of not knowing, about matters one in fact is ignorant about. Preconception has often escorted mankind into error. For that reason we teachers try first of all to induce in our students some lively awareness of ignorance. To do that we may go so far as to feign, or even confess, our own! Success in such efforts is uncertain, of course, but to the extent we succeed our work will surely improve students' Szilardian scores (hereafter I'll say S-scores for short).

But that is only a beginning. The effort which follows, we usually suppose, is an offer of knowledge, or at least of some means for acquiring it. But here of course we and our students also sometimes fail. For such failures there is a well-known catalogue of reasons, reasons which I do not propose to recite.

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Instead I wish to examine another component of the S-score, one not to be overlooked. That score goes up with false claims—not only of knowledge but also of ignorance. The S-score is an arithmetic difference, as sensitive to the one error as to the other. A false belief in our own ignorance can be a major obstacle to learning. It is one too often missed, and too easily dismissed. So the Szilard criterion, the aim toward low S-scores, absolutely requires we look at both kinds of error. We must not think our students know things they do not, that is clear. But also we must not think them ignorant of what in fact they do know! Without this second proviso Szilard's claim that the S-scores would be orthogonal to the scores on the SATs and their kind would not be statistically correct. But that is the least of it; I wish to urge that it is vitally important anyway. To explain myself I look for examples, examples of the kinds of situations in which this formal-sounding requirement comes alive and makes important sense.

In a marvelous 1884 essay, "The Art of Fiction," Henry James digs down under the usual advice to the young writer: In order to achieve the sense of reality in fiction—so runs that well-meant advice—one must "write from experience." Indeed, says James, that is right; but "the reality of Don Quixote or Mr. Micawber is a very delicate shade. . . . Humanity is immense, and reality has a myriad of forms . . . some of the flowers of fiction have the odour of it, and others have not; as for telling you in advance how your nosegay should be composed, that is another affair." Experience, he goes on to say, is "never limited, and it is never complete; it is an immense sensibility, a kind of huge spider-web of the finest silken threads suspended in the chamber of consciousness, and catching every airborne particle in its tissue. It is the very atmosphere of the mind; and when the mind is imaginative . . . it takes to itself the faintest hints of life, it converts the very pulses of the air into revelations."

This web, the network of experience, catches many vital matters which it can link to others, for recall and for use. But much experience may also get lost, stored there in some neglected parts of the web we may never enter again. Yet with imaginative effort much of it can be retrieved, and that is vital. What at first encounter are disconcerting novelties may get brought to some order, and given some residence, when we search the files and find records of earlier encounters not unrelated. Or sometimes what we thus retrieve may bring connection and order to other parts, other nodes in the web. Such discoveries may indeed create fresh surmise, or even revelation. You may think this applies only to the "flowers of fiction," so I look for other examples, other interesting kinds of encrypted knowledge.

Here is a historical example I happen to know about. Nothing is more commonsensical than our ordinary grasp of heredity, of traits somehow gotten from parents and grandparents, or in plants from seeds or scions. We've been breeding plants and animals for thousands of years, and ourselves for longer than that. To such a degree experience is not lacking, though most detail of

course has been lost along the way. To such a degree, also, much is mistaken; we mistake easy opinion for knowledge, and the S-score goes up. Yet if one is committed to a critical curiosity, much will be retained or regained, and the score goes down. Aristotle—he the biologist—was such a one. Very few of the natural phenomena accessible to observation in his day were lost on him.

In a case Aristotle knew about, a black African father and Greek mother had had a child that was fair of skin, but a grandchild—both parents now fair—that was again quite black. This I take it seemed only "unusual" to contemporaries, but to Aristotle it rightly showed that the prevailing ideas of heredity were incorrect. It was in fact a part of the evidence that led him to a novel use of ideas he had developed elsewhere. These are ideas which now belong to the central framework of molecular genetics. Heredity is not, as was believed then and for long after, the transmission of parental tissue, bits of flesh and blood, hair and bone, of this and that; not of a "homunculus." Reproduction does not involve the transmission of any matter at all, in any essential way; it is the encoded transmission of *form*. It is a process of *in*formation.

Here is another example. There was a familiar phenomenon that Galileo turned his attention to, late in his life, and which he came to see as one quite strange. This is the fact that a suction pump can only lift water some nine meters, thirty-odd feet. Nature indeed seems to abhor a vacuum; but why *only* up to thirty-two feet? That phenomenon was buried so deep in the subsoil of common sense that the great Galileo himself could not rescue it from strangeness. He bequeathed it to his amanuensis Evangelista Torricelli, who in the few remaining years of his own life found an answer which astonished the cognoscenti of Europe. He transformed that puzzling suction-pump and the pipe under it into a new kind of weight-measuring device *(lit., baro-meter)*, one critically different from the steelyards and the spring scales of commerce. With the barometer (first a sealed-in column of water, later of mercury) he could demonstrate the reality of the Ocean of Air and the vast *weight* of it—some 12 tons per square meter—yet of a substance so airy, so *obviously* weightless!

Remember, too, it was Galileo who first insisted on the strange fact that large and small weights would fall at the same rate of speed. This fact seemed then, as it still does today to many of us, to violate common sense and so to be put out of mind. Yet common sense already has, in the parts of the web it has access to, the answers to all the elements of that puzzle. Somehow, until Galileo, they were never fitted together into revelations.

A very low S-score apparently depends on a special talent: that of retrieving from one's store things otherwise overlooked, things that may make more familiar facts and ideas seem strange, seem open to re-examination; and also, sometimes, that make strange things finally seem familiar. In Plato's *Meno* Socrates demonstrates to his friends that an untutored slave boy already has

in mind the essentials of the Pythagorean Theorem, though he has never learned—i.e., been taught—it, and did not know that he knew it. It is a beautifully constructed example of the kind of teaching we properly call Socratic—in which the teacher doesn't transmit what is to be learned but instead helps a student learn to control the resources that are already there, already there in the web, already "in mind." To most high-school geometry teachers, I suppose, this story seems strange indeed. According to an old pedagogical tradition, this same Pythagorean theorem was the hardest for students to prove. It was called the *pons asinorum* ("bridge of donkeys") and students had to be whipped across it. Euclid's proof of this elegant simple truth is in fact quite needlessly complicated.

Plato's intent in that dialogue is subtle. The story of the slave boy stands on its own, simply as an account of remarkably good teaching. But the intent in telling it is to let us discover something he is trying to tell us *we* already must have known, the sense of the Platonic philosophy: that the Ideas, the Forms, are native to our minds. That revelation is one I myself can't just discard; it is in some way a come-on for my whole argument. It says there are important things we already know before we "learn" them. But let me take Plato's metaphysics just as a powerful metaphor, which I think is right: the world of forms, the myth of incarnation, and all the rest. I want to focus on one part of it, the myth of incarnation: The soul *knew* things before birth which it then "forgot." If you follow this metaphor, it lets you consider that some important ways of knowing can indeed be like *re*membering; and that being taught is then like being *re*minded, helped in one's own *re*cognition of what was somehow already there. If some learning can be like that, then of course one can be, or learn to be, one's own teacher. In the famous myth of the Cave, Plato says just that where he speaks of the art of "turning around," of *re*flecting.

If I may put this in a more "developmentally appropriate" language, it is to say that learners often possess resources of understanding, reflections of reality, potential resonances in the web, which they don't realize they have and do not always or easily retrieve for use. Good teaching helps give them access[1] to these resources—and so lowers their S-scores! I think this is why good teachers are apt to think that their students are quite bright. All students—in principle—already know a great deal, like Plato's slave boy, that will help them bring the order of understanding to old and fresh subject matter alike. But they must sometimes be helped to "remember," to retrieve for use what is already there, bringing things together that have been filed on separate occasions. Plato's examples are typically chosen from morals or, as in the slave-boy story, from mathematics. Indeed he thought that morals and mathematics were of a piece, both having patterns of form already available to be retrieved from within and seen as parts of some more ample whole. But I want to make the same point about a very different kind of subject matter, drawing still more from James' essay.

For a simple illustration of what he has said about "writing from experience," James tells of a "woman of genius" who had been praised by the critics for the impression she had given, in one of her stories, of the nature and way of life of the French Protestant youth of that time. In commenting to him, that writer told James that she had only once in Paris, quite momentarily, passed an open door in the house of a clergyman "where some of the young Protestants were seated at table round a finished meal." That, she told him, was the sum total of her acquaintance with French Protestant youth! James then adds, "The glimpse made a picture; it lasted only a moment, but that moment was experience. She had got her direct personal impression, and she turned out her type. She knew what youth was, and what Protestantism; she also had the advantage of having seen what it was to be French." So "she converted these ideas into a concrete image and produced a reality." I cannot quote the whole marvelous discussion of "writing from experience" but it concludes with a Q.E.D: "Therefore, if I should certainly say to a novice, 'Write from experience and experience only,' I should feel that this was rather a tantalizing monition if I were not careful immediately to add, 'Try to be one of the people on whom nothing is lost!' "[2]

The story of that lady novelist of genius is of a perception which "converts the very pulses of the air into revelations," bringing together as one the already known but disparate elements of such a revelation; three different and separate phases of past experience fitted elegantly together, once a clue was provided, like pieces of a jigsaw puzzle. I think, however, that one cannot quite so easily account for another literary marvel, that of bachelor James' own stories of children. I have it on good authority, however—from an expert on children and on James—that you can find in his life most of the pieces of that puzzle.[3] When he puts them together they do indeed have "the odor of reality."

This whole account of literary creation, I realize, is a close match for Plato's story of the slave boy, though there is none of Plato's metaphysics in it. Assume everything we can retrieve from the mind's storehouse has had its origins in mundane experience: nevertheless it still remains true that on any occasion of educationally significant learning, information from without must call forth and be matched by resources, from the inner web, with which to meet it. In the case of mathematical invention, that inner source may well be the main one, though I will stay clear of the arguments about what it is that mathematical truth is true about. Here I have only wished to use Henry James' figure of the spider web to suggest a commonality of style between what are otherwise very different ways of knowing.

As Plato's story of the slave boy implies, mathematics is a bringing together and elaboration of relatively few sharply defined patterns of experience we all share, which—strange indeed—support a vast wealth of derivative concepts, facts and examples. These in turn anticipate a far wider range of experience than that from which those patterns have been first taken. Each stage

in the growth of mathematics has provided both the raw material and some of the means for investigating further stages. As a way of knowing, mathematics depends, more than any other, on the web itself, its structures and its resonances, and least of all on any specific findings of experience.

Examples like those of Aristotle or of Galileo and Torricelli are reminders, however, that even thoroughly empirical kinds of knowledge, in biology or in physics, never grow except as fresh experience can root itself in what can be found already there in the web. As experience is extended to new dimensions, the ordering of it must be somehow engrafted on those older roots. Otherwise it cannot flourish well or even survive.

I began this discussion with our experience as teachers, concerned with what our students know and don't know, and the two kinds of error they can fall into—thinking that they know when they don't, or that they don't know when they do. I wish to end by looking again at the teaching art, but this time in the mirror—asking about our own S-scores as teachers. The first kind of error a teacher can make, again, is not hard to define. We may think we know more than we do! Or we may wrongly believe that since we are engaged in teaching something, our students are therefore engaged in learning it.

But again it is the other and often more obscure kind of error that I find most interesting to focus on. Knowing our way around in our own special subject matter is of the essence, but not all of it. As teachers we also need to know the ways beginners can get around, and get lost; the ways, perhaps the many possible ways, in which students can begin to find themselves in resonance with what we teach, be enticed by its charms, and be entrapped by it. And that is a matter about which there may be much within the web of our experience, yet much that we fail to recover. We ourselves after all have been beginners; we have found our own ways, and gotten lost in some of them. The record of that history and of our later successes is all there in the web if we can recover it: "Try to be someone on whom nothing is lost!"

There is a maxim I heard first from the physicist Victor Weisskopf, much admired as a teacher of theoretical physics: "Don't try to cover the subject; try instead to *un*cover part of it." We have all heard a standard teacherly complaint: "I have to get through the text, the syllabus, etc., and there is not enough time." But of course the notion is absurd: You can never get *through* any worthwhile subject matter, let it be Beowulf or plant genetics or the theory of functions of a complex variable. If we could get through it we would be out again.

So as teachers we really have to go back to the matter of access and our own never fully defined resources as mind-readers and mind-trappers. If once a student has become able to communicate with us on our own level, even in some small part of the subject matter—to ask one of *our* own good questions, or announce a conclusion we value—that says we have had some success. But before that we must have learned to communicate at the students' own initial levels and doing so involves ladders—down-ladders as well as up-ladders. It involves access to ways of being and thinking that we ourselves

may have long since left behind, yet with effort we can recover and build upon. Just such access can give us a way of plotting students' intellectual trajectories, catching them along the way, and helping them uncover some parts of our subject matter.

For illustration I offer an error of my own, one I made repeatedly in teaching some very elementary science. As a child of five I had stumbled onto the optical phenomenon of the "pinhole image," the simplest *camera obscura*. I had forgotten about it until my teaching puzzles brought it back in increasing detail. It was from a small knothole in the outer western wall of a rustic mountain cabin. Light was shining through into an otherwise dark closet from a scene of white desert sands and distant mountains. It made a vivid picture on the wall, but one that was upside down! I played with it, covered the hole and uncovered it, looked out through the hole in different directions, and finally realized that the picture was reversed, north for south as well as top for bottom. Later in childhood I played with mirrors, with colors from their beveled edges, sending shafts of sunlight far up the street to shine on distant buildings. The ideas of simple geometrical optics, for such reasons, have been with me ever since—"obvious," Platonic, *as though native to the mind*—and so, of course, I mistakenly believed, to everyone else!

It took me a long time, in consequence, to understand how badly I taught this little subject to beginning students, some of whom seemed more disturbed than happy with my proffered "explanations," explanations which of course presupposed the very understanding of what I was trying to get across. Their failure—mine—was as profoundly puzzling to me as was the projective geometrical language of light-rays[4] to some of them. It has been only in very recent years that I have come to understand the mind-set—may I now say the "mind-web"—of adults innocent in such matters. What I by chance had put together very young, they still had in their minds only as bits and pieces. To learn to help, I at least had first to retrieve the ways I had once put these optical bits together. From there, with students' help, I could track some other ways to the same end. I had once thought it was a thin and obvious little subject!

Suppose, to take another example, that history is the subject matter. Can the good historian, long addicted to the marvels of it, recover any of the mind-set, the web texture, that she or he lived with before that sense of the past became so vivid and enticing? And find the loci, in that web, where things present, or things remembered, first came to cry out for the extension history promises, beyond memory, into a deeper past? There are many biographical stories to be told about how doorways into the past have been opened to fresh curiosity, probably never twice quite the same. It might be a historical romance, or a biography, or an archeological dig. With bad luck and one or two fine exceptions my own history teachers seemed helpless, and even indifferent, in the face of students—for a long time I was one of them—who had opened none of those doors on their own. I think such teachers could

no longer comprehend a mind-structure so lacking, they could only disparage it.

The second component of the S-score, when we look to see what it might mean, raises subtler questions than the first, and they are less often discussed. If I am at all right about their importance, then I think we ought—in a more sober spirit—to keep chasing this kind of concern around the curricular circle and raise each time the same question: How can we who teach gain better access to our own resources, in the web of our own experiences, for helping students find theirs and for catching, from upwind of our lecturing, the odor of reality?

Notes

1. The term "access," used as it is here, is one put in center place by Prof. Eugene Gollin in his research in child development and in his criticism of research which neglects its significance. The same children will in general be at different "stages" of intellectual development depending on the kind and degree of *access* to subject matter that the ambience of research allows them.

2. Henry James, "The Art of Fiction"; the copy I have is in *The Portable Henry James*, The Viking Portable Library, 1975.

3. Frances Hawkins, who has introduced me to many of these rich literary worlds of childhood.

4. A very nice discussion of the intellectual depth of geometrical optics (which is considered so "elementary" in the trade) is in Stephen Toulmin's *Philosophy of Science: An Instruction*, Hutchinson's Univ. Library, London and New York, 1953. This kind of scientific discovery, Toulmin shows, is not at all a matter of "discovering" new facts of nature but rather of new ways of ordering them.

You *Can* Get Good Help These Days: Working with Teaching Assistants in Large Lecture Classes

Walt Stone

As I walked down the hall, I was approached by a smirking colleague from another department. He had heard I was planning to teach a large "megasection" of an introductory course. "It'll be the worst experience of your life," he assured me in gleeful terms.

He was wrong, but I must admit that he increased my already high anxiety about teaching the course. My apprehension was due to the fact that I would be facing so many students in a format which stretched the limits of the lecture style of teaching. I had (and continue to have) visions of all of the students in the class simultaneously tapping their pencils as a petty distraction or as a mean-spirited response to my attempts to enlighten them. In a class of 40, the instructor has ways of regaining control in such situations which are simply unavailable when the class is ten times that large. The class has immense potential power which might be unleashed if it realizes its strength.

Actually, the problems associated with teaching large courses are both more important and less dramatic: How can students become active participants in the course rather than passive observers? How can I encourage critical examination of the course material? How can I get them to write with any realistic hope of providing genuine feedback on what they have written? Must the material be watered down, reduced to its simplest essentials in a large class? Must the entertainment component of the course be boosted as a sacrifice to more central values?

I do not think I have definitive answers to these questions, but I am reasonably confident of at least part of the answer: I need help. That is, I need help to engage the students actively in the course, to require and evaluate writing, and to keep the course as rigorous as possible. The help I can get is in the form of teaching assistants assigned to the course. This essay is an account

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of how I depend on teaching assistants to help me accomplish my goals in the course. It is based on my personal experience with some two dozen teaching assistants in the four times that I have taught the large section.

The Course

The course is entitled "The American Political System" and serves several purposes in the curriculum. It is required of all political science majors and, for most, introduces them to the discipline as well as to the study of American government and politics. It is also on the college list as meeting part of the social science requirement, and it is required of all students in the Business School. It is, in short, an introductory "service" course.

There are two general approaches political scientists commonly take in teaching the course: citizenship training and introduction to the discipline. Regardless of the approach taken, the topics likely to be covered include Constitutional foundations of the American polity, major governmental institutions, and patterns of political behavior. The citizenship training approach is likely to focus on a descriptive overview of these topics. It assumes that the educated citizen must know certain things about why the system is organized the way it is, how the institutions function, who participates, and the like. This approach is likely to lead to a relatively comprehensive course which is largely "fact-driven" in the analysis undertaken.

I take the second approach to teaching the course. I think of the course as an opportunity to acquaint students with the way political scientists think about a problem, generously illustrated with examples of the kinds of theory and evidence they bring to bear. I am interested in introducing students to the relationship between the "large" normative questions motivating the discipline and the "small" issues of empirical theory and evidence which occupy the attention of most research in the field. I cover many of the same topics addressed by those adopting a citizenship approach, although I do not worry about being comprehensive either in the range of topics I address or in the coverage of any specific issue. In discussing the Congress, for example, I am more interested in linking the analysis to theories of representative government than I am in giving a complete account of the rules or procedures followed by the institution.

The theme I employ in the course focuses on the central claims of James Madison's defense of the American Constitution found in his *Federalist Papers*. The most fundamental of these claims is that self-interest can be organized in politics to produce the public good. No one in the system—neither occupants of public office nor citizens—need pursue anything other than selfish gain, according to the argument, and the public good can still be achieved.

Examining this claim involves two basic steps. First, the theory itself must be understood and its relationship to the institutions described by the Constitution comprehended. Second, the argument must be tested using theory and evidence generated by research on various aspects of contemporary Amer-

ican politics. Are the assumptions of Madison's theory correct when laid against the evidence? Are the values motivating the theory consistent with contemporary values afoot in the political culture? How does one evaluate competing evidence and values? What alternatives are there and what are their implications for reform or defense of American institutions?

I bring certain assumptions to my teaching in this course. First, introductory courses are difficult to teach. They require a relatively broad coverage of material which may be confusing to the student. One can assume little or no background in the discipline, so basic concepts and methods must be reviewed in order to proceed. Most importantly, students must be "sold" on the material more than is true in the average upper level course. Almost all students are responding to requirements of one sort or another in taking the course, and many may resent being there.

Second, I do not assume that introductory courses must necessarily be easier or more watered down than upper division courses. To begin this way, in my view, would burden the enterprise impossibly, given the other limitations surrounding the class. It is true that most students have no prior experience with the discipline, but that may make the course more, not less, difficult.

Third, I assume that the course taught to very large sections of 400 or more students can be substantively equivalent to the same course taught to 40 students. Doubtless, some changes must be made. These include those associated with student-professor contact, principally. I have also found that I cover material at a slightly slower rate with the large class. This is due, I think, to my difficulty in determining when it is safe to move on to the next step in an argument or presentation. I suspect I am more cautious in that regard when I cannot read individual students' expression of puzzlement or dismay. Nonetheless, I try not to sacrifice the rigor associated with pursuing the goals of the course because of its size.

Students in the course are required to attend two lectures and one recitation per week. The recitations usually consist of 30–35 students and are run by the teaching assistants. Requirements for the course have varied, but always involve one or more midterm examinations, a final exam, and independent work in the recitation.

Using Teaching Assistants

With that as background, how do I make use of the "help"? First, I make clear to the teaching assistants how important I think they are to the success of the course. That is, I do not think I could teach the kind of course I want to teach without them. That is a completely honest belief on my part, so I simply tell them why I think it is true. For instance, I tell them how important writing and discussion are to achieving my goals. It is virtually self-evident that students can do neither unless they (the TAs) help. I cannot grade 450 essay exams, and I cannot entertain more than the most pointed and structured discussion in lecture.

While I think of teaching assistants as providing help in the course, I also try, as much as possible, to treat them as colleagues. Ideally, the working environment for the course is a kind of structured collegiality. I claim ultimate responsibility for the course, and I do not deny my superior experience. Nonetheless, they have much more contact with the students in the class, and they are more likely to know what is confusing and what is getting across. They also do much of the work. Therefore, they should have some significant say in what we do in the course.

Accordingly, I take primary responsibility for some areas, and others are very much up for discussion. For example, I choose the texts, I determine the direction of the course through the lectures, and I set the broad standards and expectations of the students. I require that most of the course grade be based on written essays, and that certain policies be followed in the grading (see below). As a group, we decide such things as the content and exact format for the examinations, the number of exams and their relative weight, and the discussion section assignments. I generally insist on broad conformity across sections, although there is some room for TAs to shape their classes to their tastes.

The Seminar

When the teaching assistant position is described to graduate students, one requirement I make known to them is a weekly seminar meeting. This is where most of the discussion of the course takes place. We meet for one to two hours a week in order to discuss the next week's lectures and readings, to deal with questions and problems which are showing up in the recitations, and to plan examinations. As the semester proceeds, there is usually a fair amount of story-swapping about teaching problems from how to generate discussion in 8 A.M. sessions, to getting past the eager beaver student who will not let anyone else talk, to handling complaints about grades, to presenting a particularly difficult concept. The free-ranging discussions are often the most productive parts of the seminar.

Prior to the beginning of the semester, I have a preliminary meeting with the teaching assistants to settle certain fundamental policy questions which will have to be laid out in the syllabus. I usually start by spelling out my assumptions about the course, and the importance of their role. We then discuss how many midterm examinations we will have, how much of the total grade will depend on performance in the recitations, and what the recitation grade will be based on. Once these kinds of broad policies are set, I can prepare the syllabus for distribution to the class.

In my view, the seminar is the linchpin of the course. It puts us in regular contact with one another, it enables me to help the TAs with their preparation, and it provides a forum for them to communicate problems they are having in the course. In seminar discussions, I have received very helpful suggestions on matters ranging from how to clarify a central point in the

argument to reminders to quiet the talkative group in the back of the lecture hall. The seminar is the mechanism whereby we become a working group with a shared perspective on our task. It also makes the semester more enjoyable since worrying over problems, drawing up exams, developing a grading scheme, and discussing how best to lead discussion sections are all aspects of the course made more pleasant when shared. I am also convinced the result is a significantly better course than would otherwise be the case.

The Department has discussed various questions related to granting graduate independent study credit for the seminar. Some TAs have opted to take independent study credit, but most do not. Probably the next step in this regard is to develop a more formal course devoted to teaching techniques, systematic feedback to teaching assistants, etc. But for now, the seminar has evolved into part of the responsibilities associated with the appointment—a part, incidentally, which TAs seem to accept and appreciate as helping them meet their responsibilities.

Grading

One way of signaling both the TAs and the students in the class that the sections are important is by assigning a portion of the course grade to performance on written work in the section. Over the four years I have taught the course, the proportion of the course grade allocated to the section has varied between 10 and 20 percent. Within limits, this portion of the grade is under the control of the teaching assistant. One important limit is my requirement that the grade be based completely upon written work. There is always the temptation to include in the section grade an evaluation of oral discussion since that is an important purpose of the section. However, I believe that this is extraordinarily difficult to do in a fair and consistent manner. The written work usually consists of a half-dozen short, unannounced quizzes on the readings or lecture materials. Some TAs opt for longer quizzes which better approximate the question format on the course examinations or take-home essays of an even more protracted sort. Those options increase the teaching assistants' grading burden considerably, so I make certain they know that is not an expectation of their position.

The grading of midterm and final exams is highly structured. We meet immediately after the exam for several hours to discuss what ideal answers should look like. We also do some shared grading. An answer is read aloud, everyone independently grades the answer, and the discrepancies are discussed. We do this for every essay question on the exam, and following the meeting I write up a fairly detailed "key" which spells out the expectations for each question. These are distributed and used as the basis for grading. An important reason for the discussion and the key is to bring about as much uniformity as possible in the expectations and demands across sections.

I impose several general policies on the grading process (which I follow myself in courses where I do the grading). First, all grading is blind.

Students do not record their names on the blue books, and every effort is taken to preserve that anonymity through the grading. That protects the teaching assistant against charges of bias as well as avoiding the inevitable effects of prior judgments (good or bad) about students based on past performance.

Second, grading is done "horizontally" by question, rather than one blue book at a time. This further protects against bias since the grader does not learn about the student as he progresses through the blue book. It also requires the grader to keep one question (and answer) in mind at a time which further ensures consistency and fairness. Moreover, problems without expectations, question wording, and the like, very quickly emerge when the grading is done this way.

We have discussed additional steps which might be taken in order to protect against bias. One idea which we have never implemented is to assign a question or questions to each TA and have that person grade everyone's answers. This would protect against the breaches of anonymity which creep in when TAs learn their students' handwriting, and it would also even out the effects of differences in grading among TAs (see below). So far, we have rejected this procedure because it would increase the boredom associated with grading, and because the logistics of exchanging bluebooks among a half-dozen teaching assistants would be complicated.

Once the grading is completed, I weigh in with several procedures designed to test and promote equivalence across the sections. In recent years, the exams have involved both a multiple choice section (worth 30–40 percent) and an essay section. The entire exam, including the essay grade recorded by the TA on the scanner sheet, is machine graded by the Office of Research and Testing. I then receive a computer file which includes each student's score on the multiple choice portion of the exam and the TA-graded essay portion.

The first thing I do with this file is make some checks on the distributions. I check to make sure the essay distributions for each TA are reasonably symmetric, and I calculate the correlation between essay and multiple choice performance for each TA's group of students. I have no firm expectations about how strong the correlation would be, although it should be positive and reasonably strong. If it were perfect, the multiple choice and essay portions of the exam would measure the same thing, and I could save everyone a lot of trouble by simply giving multiple choice exams. Typically, the correlations vary from a low of about .4 to a high of .6, and that is my general expectation. If the correlation for a TA falls much below .4, I do further analysis and/or talk with the TA in order to see if I can determine why there is not a better fit between the two portions of the exam. In this way, I have uncovered problems relating to TA misunderstanding of some part of the exam or the grading instructions, and clerical errors in the recording of the essay scores.

The second thing I do with the computer file is normalize each TA's distribution of scores in order to make them statistically equivalent. That is, I use a Z transformation to make the means and the standard deviations of the

distributions identical. The resulting Z-scores are recorded on the bluebook and reported to the student as indicating his position relative to the other students with the same teaching assistant. I normalize the distributions in this way in order to avoid inequities associated with differences among the TAs' grading. Despite the extensive discussions and comparisons we carry out prior to the actual grading, I regularly find some differences among the TAs, and the Z-scores remove those differences. This technique requires me to assume that the rankings of the students would be consistent across the TAs—an assumption I can live with given the effort we have devoted to developing shared expectations of answers to the exams.

Writing Exams

Writing the exams is an important task of the seminar. Writing the exams involves settling on a format, writing the questions, and some degree of "pretesting."

When I first taught the large course with teaching assistants, the exams were entirely essay. The kinds of essays varied from relatively brief "identify and give the significance of" questions focusing on a single concept and requiring one or two paragraphs, to full-blown essays requiring the student to tie together several topics and draw upon a broad range of concepts and evidence in the lectures and readings. I continue to insist on primarily essay exams, but as a result of suggestions made in the seminar, the format now typically includes a section of multiple choice questions. These relieve some of the grading pressure on the TAs since they are machine graded, and they offer a baseline for comparison with the essay portion of the exam, as discussed above. Comparing multiple choice and essay performance can also be a useful diagnostic tool in working with students. For example, when a student does very well on the multiple choice section and poorly on the essay, that suggests he knows the material but has difficulty expressing his understanding. One can then work on writing clarity, how to construct an argument, and the like.

Writing an exam begins with a discussion of the general format. With agreement, for example, that the exam should include multiple choice and essay questions, TAs begin turning in sample questions. I edit the sample questions and produce a draft of the exam. This draft includes many more questions—especially essay questions—than we will ultimately use. I then give the TAs the draft multiple choice questions to take in the seminar. Inevitably, taking the exam in this way makes the TAs a bit uneasy. My reasons for doing it have little to do with testing them and everything to do with testing the questions.

When they have completed the exam they exchange copies, and we go through it question by question. When a "wrong" answer turns up, we discuss in some detail why the TA got it wrong. In some cases, the TA is merely confused about a concept or was careless in answering the question. But most

often there is a problem with the question. We try to write questions which require the student to enter into some significant portion of the reasoning in the course. The alternative (wrong) answers must be plausible, and often the problem with the question is that a "wrong" answer can be supported by reasoning or evidence available from the course. The discussion of questions also reveals ambiguities in the wording, redundancies, and the like. I inevitably leave a session evaluating an exam in this way believing the process has been extremely beneficial and has produced a better exam.

I do not ask the TAs to take the essay portion of the exam, although we discuss in a preliminary way what our expectations will be. I have the feeling that asking them to write essays would risk the good will and team spirit generated by the seminar with little potential gain. But I would be interested to know whether others teaching large lecture classes have experimented with this idea.

The Discussion Sections

Teaching assistants occupy an odd (and potentially difficult) position in the learning process. They have real autonomy in the classroom with genuine opportunities to influence what students learn and how they learn it. They make important judgments about student performance which ultimately determine—far more than anything the professor does—the grade the student receives. At the same time, the course is not of the TA's making and may involve material and approaches with which he is unfamiliar, or which he finds intellectually incompatible. Teaching assistants must play second fiddle to a player they may not respect or like, with a "score" they might never choose. What goes on in recitation sections, then, may reflect the TAs' potentially awkward position, or it may be a harmonious extension of the grand design for the course. Whatever happens, the success of the recitations is critical to the success of the course.

Much of what has been discussed above is, of course, designed to support the day-to-day activity in the recitations. If a significant portion of the student's grade depends on written work performed in recitation, his or her attendance and attention in recitation should be enhanced. If the TA seminar is successful, problems which occur in recitation are discussed and strategies for solving them are developed. If exams are well constructed, students receive useful feedback on their performance and the interactions between students and teaching assistants are more profitable. Despite what one hopes is a generally supportive environment for the recitations, some attention must be devoted to what happens in them and how to keep them on track.

I have noticed that teaching assistants, especially those with no prior experience, are uncertain about what their role in recitation is. This is not surprising, but it can lead to trouble. The instructor's most consistent modeling comes in the lecture, and I have found that TAs frequently adopt a "lecturer" role in recitation. They may cover one of the assigned readings not dealt with

in the regular lectures, or they may repeat or enlarge upon material covered in lecture. For the teaching assistants to step into the role of lecturer, however, is for them to miss the point. They are discussion leaders. Their task is to draw out their students' understanding of the material and to make them aware of those aspects of the course they do not fully grasp. I see their job as replaying the week's lectures and readings, but making the students do the work, not doing the work for them. In lecture, students are necessarily passive; in discussion section they must be activated.

Leading a discussion is in many respects more difficult than giving a lecture. In giving a lecture, the instructor maintains control of the agenda and of the content. He sets the framework and then fills it in. He may ask for questions, but he is unlikely to be surprised because he forces his audience onto his terrain. The discussion leader gives up most of that control. In a discussion, the leader often receives comments which suggest a different tack than one he has set for the class. Should he follow the newly suggested direction or re-channel the discussion along its preordained course? If he lets go of his structure, he risks confusion; if he holds to it too tightly, he risks limiting the class to pat or anticipated answers to complex issues.

I do not solve this problem of the TA's role except to assert they are not lecturers and that their role is difficult. A certain amount of structure is mandated by the course since students must master the relevant concepts and theories. I suggest that discussions begin with fairly pointed reference to the lectures and readings to make certain the students understand the raw materials with which they must work. Often that sort of "review" is all that can be achieved. The higher purposes of discussion, such as helping the students to teach themselves, to draw out implications of the material not anticipated by the instructor, and to grapple with the normative implications of the analysis, probably cannot be forced.

I encourage TAs not to rely on those in the class who volunteer in response to discussion questions. Relying on volunteers to carry the discussion gives both the TA and the rest of the class an unrealistic picture of how well the material is understood. Those who volunteer usually have some idea of an answer to the question posed. Those who do not volunteer may be confused or uninformed because they have not understood the reading. A discussion which depends on volunteers tends to intimidate the passive student who may be confused by leading him to believe the rest of the class understands much better than he. The reality, of course, may be otherwise, particularly since volunteers participate selectively. When discussion leaders call on people in a more directive fashion, they are also much more likely to encounter the full range of confusion or inattention in the class and to be in a position to work out those difficulties.

Although it can be a sensitive issue, I visit recitations. Some TAs are quite nervous at the thought of having me present, and there have been times when my presence has disrupted the class. In discussing my attendance, I empha-

size its importance to me since that is the best way I can learn of the students' confusion about the lecture and readings. I also suggest that I may be able to help the TA with any difficulties he or she may be having with the class. I begin visitation with the more experienced and confident TAs and, visiting one class a week, move to those who are more threatened. I usually follow the visitation with an informal discussion with the TA about how the class is going. In that context, I can stress the positive aspects of the class and make suggestions about things that might be improved. It also is another opportunity to discuss the students' difficulties with the material and to explore ways in which student confusion might be relieved both in lectures and in recitation.

Problems

All is not peaches and cream, however. While I believe one can get good (and necessary) help from teaching assistants, I have also encountered a number of difficulties. I view the problems I have had with teaching assistants as inevitable consequences of depending on others to complete a complex task. I think the procedures described above, especially the regular contact maintained through the seminar, help minimize the problems. In loosely comparing notes with colleagues, I am convinced that difficulties related to the competence and motivation of teaching assistants can be limited (though not removed entirely) by creating a reasonably structured and regular way of interacting. The seminar creates a sense of shared purpose and camaraderie that helps keep everyone on a similar track and committed to making the course work.

Competence. The most common problem I have had relates to the general competence of TAs. I find it useful to remind myself that these are, after all, graduate students who are still very much in the formative stage of their careers. They have much to learn about the discipline and about teaching. Often they lack confidence; sometimes they are too confident. The easiest (and most frequent) problem cases arise when a TA is merely confused on some point from the the course. More difficult cases have involved habitually confusing presentations to the section, and lack of preparation or persistent confusion by the TA.

In the more difficult cases, I have tried to identify the heart of the problem with the TA and then together develop a focused strategy for attacking it. For example, if the discussion in the section is confusing and without direction, I ask the TA to prepare a limited agenda for the next session and to show it to me. We discuss how the topics are related, and usually I suggest paring down the lesson plan to cover only one or two major points. Then we role-play the discussion together, how it might proceed, the questions which might come up, the confusions that might creep in. I then suggest that the TA stick very closely to the plan, even if the hour is not filled. With follow-up discussions about how things went, we try to develop a sense of how to give focus and clarity to the section. In cases where the TA feels inadequately

prepared in the substance of the course, I usually suggest some additional reading in the form of more comprehensive texts than those used in the class. There have also been numerous times when the seminar as a whole devotes its energy to developing in greater depth some substantive aspect of the course.

Disagreements. Unlike similar courses in the physical and natural sciences, the introductory course in political science can take any number of approaches. It is not uncommon, therefore, to have advanced graduate student TAs who disagree with the approach taken in my course. If I know in advance of the potential for this kind of disagreement, I discuss the matter with the prospective TA to make certain we can work together. Whether the disagreement is identified in advance or discovered along the way, I try to convince the TA to suspend judgment on my approach, at least to the point of not openly ridiculing it to the students. Once students understand the perspective I am offering, TAs then have enough latitude to suggest alternative ways of looking at a problem, so long as it does not confuse the students or unnecessarily complicate things for them. We discuss the area of disagreement in seminar and/or privately in order to determine how much argument to bring into the classroom. I insist that the TA present the disagreement in a way which does not deny the plausibility of the alternatives or ridicule my position. In essence, my approach to such problems is to assert my confidence in the approach I use, to defend it in friendly argument before critics among the TAs, and when necessary, to claim final responsibility for the direction of the course. I should probably point out that, if anything, the tendency of most TAs is to accept the direction I have set for the course too uncritically, rather than to adopt a position of churlish dissent.

More personal conflicts have arisen in several cases, usually related in some way to substantive disagreements in the course. A conflict of this sort does not particularly trouble me unless it interferes with the course either in the TA seminar or in the section. If after discussing the problem and trying to work out a solution I ever felt the conflict was continuing to interfere with the course, I would not hesitate to dismiss the TA and teach his or her sections myself. Fortunately, I have not had a conflict with a teaching assistant that has become that severe.

Student complaints. Student complaints about teaching assistants appear to be inevitable. My policy is to assure myself that the TA has followed the policies for the course and to back the teaching assistant as much as possible. The most common complaints result from dissatisfaction with a grade on an examination. I will agree to review a TA's grading of an exam, but only under certain conditions. First, the student must have talked with the TA and explored the reasons for the grade received. Second, the student must understand that the grade is placed within the distribution of all students taught by the TA, a distribution I cannot possibly recapture in grading a single exam. Thus, I might read an essay and agree with the student that the raw grade appears to be too low ("I would have given this five more points"). However,

that does not in itself justify changing the grade since it is possible that I would have given all such answers five more points with no net effect on the relative position of this exam in the total distribution. Thus, in order to change a grade, I would first have to read the exam, find clear evidence that the TA had misunderstood the essay, and then consult with the TA to verify that there was a misunderstanding. I change very few grades. In fact, I do not permit TAs to change grades unless they can show me that a clear misunderstanding took place.

Complaints about TA competence, personality conflicts, and the like are more difficult to resolve. I am able to describe to unhappy students the procedures I follow in order to help TAs carry out their assignments. I indicate that I attend sections and discuss them with the teaching assistant, and sometimes I am able to say we are working on the problem that generated the complaint. When all else fails, I plead for understanding and compassion—it is easy to be critical of teachers; it is not easy to teach.

Conclusion

I do not think huge lecture sections are an ideal way of educating undergraduates, especially freshmen and sophomores embarking on their study of a discipline. Ideally, the introductory classes should be small with intense interaction between professor and student. Large classes, if necessary, would be relegated to the more advanced student better equipped to teach herself. That model, of course, does not fit with the organization of the curriculum, so we make do with large introductory courses.

There are some advantages to the large introductory course. Departments can put their best and most committed teachers in the introductory class. The instructor can harbor the hope that he or she is reaching a large audience. Perhaps most importantly, the large class encourages the use of graduate teaching assistants. It offers them the chance to teach in a relatively structured and supervised apprentice role before beginning their teaching career. If teaching assistant positions are viewed as an integral part of the graduate education, they can contribute a unique experience to young academics which will give them a taste of the role of the scholar in the classroom in a relatively safe way. They can concentrate on some aspects of their teaching without having to master all of the components of successful teaching.

Perhaps the greatest benefit of the large class with teaching assistants is to the instructor. Since teaching the course in this way, I have been forced to reexamine and articulate most of the arguments and assumptions I bring to the class. I have been challenged in highly professional and stimulating ways to think about the course, to try new ideas, and to defend some old ideas. Far from being the worst experience of my life, working with graduate students in the course has been among the most exciting and satisfying undertakings of my career. It presents an additional dimension to the teaching beyond motivating Chuck Middleton's "thundering herd." One needs some

trail mates to bring the herd home. Finding the trail and working together to nudge the class along it is a humbling assignment, and one needs lots of help. I have found the help both necessary and adequate to the task.

Memory for Classroom Algebra

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In this paper, we would like to do two things. First, we would like to present the steps we went through in studying how well undergraduate students remember after long periods of time what they learned earlier in the classroom. Both the study of long-term retention of information and the study of knowledge learned in a naturalistic (as opposed to laboratory) situation were new to us. In the past, our research as experimental psychologists had focussed on the laboratory study of relatively short-term memory (i.e., testing memory for material learned less than a day before, usually testing within an hour of learning the material). Thus, studying long-term retention of classroom-acquired knowledge presented new challenges to us and proved to be a learning experience for us as researchers. We will present the questions and considerations which arose as we progressed through the study, and some of the difficulties we encountered.

The second goal of this paper is to present the results of a specific study we conducted examining the long-term retention of algebra. We expect that not only the empirical results of this study but also the methodology we developed for investigating the long-term retention of knowledge will be useful to others who are interested in evaluating what students acquire and retain from their courses.

Background

Our research began with the general question of what factors affect long-term memory for information and skills, in our case the knowledge contained

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in algebra. The first psychologist to study empirically the process of human memory was Hermann Ebbinghaus (1885). In the late nineteenth century, he constructed lists of nonsense syllables (e.g., LOD, DAX), then mastered them to various criteria of performance. At various intervals after learning a list (e.g., 20 minutes, 30 days), Ebbinghaus tested his memory for a given list. He found that his memory decayed rapidly in the first two days, then remained at a fairly stable level for the next 28 days. Although Ebbinghaus' work inspired a great deal of later research on memory, few researchers took up the study of the retention of information over long periods of time (more than one or two days).

The reasons for this gap in research are largely practical rather than theoretical. First, it is difficult to locate and recontact subjects for memory tests months or years after original learning. Second, most researchers do not want to wait for great lengths of time to gather data to test their hypotheses or questions.

Despite these problems, one current researcher, Harry Bahrick, has diligently pursued the study of long-term retention. Bahrick bypassed the abovementioned difficulties by using a *cross-sectional* rather than a *longitudinal* approach to study memory. Under the longitudinal approach, subjects who all have been trained at a given time are retested at various later times, as Ebbinghaus did. Using the cross-sectional approach, groups of people who have been trained at various different times in the past are tested simultaneously. In the longitudinal approach, the researcher must wait varying intervals in order to test subjects; in the cross-sectional approach, the researcher can test subjects immediately and retention intervals (the time between study and test) are calculated from when the subject was last exposed to the material. Bahrick used the cross-sectional approach to study retention of names and faces from high school yearbooks (Bahrick, Bahrick, & Wittlinger 1975), the map of a college town (Bahrick 1983), and Spanish learned in school (Bahrick 1984). Since the Spanish study is most directly relevant to our own study of algebra, further discussion of Bahrick's work will focus on this study.

Although the use of the cross-sectional method eliminates the need to wait to obtain data, it raises some other methodological problems. It does not control for whether or not students who had learned material at different times learned the same material. Individuals will also probably vary in the *level* of Spanish knowledge that they originally attained. It is possible that the original level of knowlege achieved may predict performance on the retention test better than the length of the retention interval. Finally, students may vary in how much they used Spanish in the interval between study and the retention test. Bahrick was aware of these problems and attempted to control for individual differences in original level of training and in practice after training. (We will discuss how he controlled for these factors later in this paper.) When these factors were taken into account, Bahrick found that memory declined fairly rapidly for the first three years after learning the material, then remained

stable through a retention interval of approximately *30 years*. A further decline in memory performance was found after 30 years, but Bahrick posited that this later decline was due to neurological damage caused by old age rather than any fundamental decline in memory per se. Bahrick found it interesting that a long period of time existed when memories did not seem to decay. He suggested that memories which remain after the initial rapid decline are permanent (i.e., they will not be lost, unless there is some neurological damage), and he labeled these memories "permastore."

Our Hypotheses

The idea that some part of the originally learned material remains permanently in memory intrigued us as well. We wondered whether there are particular *types* of knowledge and skills which are retained while other types are lost. We developed several hypotheses about what types of knowledge might be permanent and what types might be easily lost. For example, one hypothesis was that information and skills which are integrated with a broader system of knowledge (here, we will use knowledge to cover both information and skill) should be easier to retrieve and therefore less susceptible to loss. On the other hand, pieces of information or skill which are relatively unconnected to other knowledge might be easily lost. Assume that you are given the facts "Carlton Fisk was one of the Red Sox' greatest catchers," and "William Estes is one of Harvard's greatest psychologists," and you have a great deal of knowledge about baseball with which to integrate the first fact but little knowledge of academic psychology with which to integrate the second. You will be more likely to remember the fact about baseball than the fact about psychology, which must be remembered as a solitary piece of information.

A second hypothesis was that relevant knowledge structures existing before a course begins are more likely to be retained intact than knowledge gained during the course. When students enter a class, they have some prior knowledge of the material. Although Math 101 at the University of Colorado is a beginning College Algebra course, for example, most students have taken at least one algebra course earlier in high school. Thus, students enter the course with a relevant structure of knowledge. During the course, this structure is elaborated with new knowledge. Added knowledge is likely to be more susceptible to forgetting than knowledge which is a part of a preexisting structure.

Why We Chose Algebra

Our next step was to find a knowledge domain within which we could test our hypotheses. College Algebra seemed to be an excellent choice for several reasons. First, students learned the material in a naturalistic classroom situation, rather than in an artificial laboratory setting. Second, researchers have

performed task analyses of the important components of algebra (e.g., quadratic equations, factoring equations, completing the square, the distributive property). They have also classified the types of errors and some reasons for the errors that students make. Both the task analyses and the analyses of errors aided us in constructing a valid test of algebra knowledge.

Third, we wanted to do a longitudinal study; that is, we wanted to test students who had studied the same material at the same time and then have them return at different intervals after they had learned the material. Students taking Math 101 were likely to be freshmen, and we hoped that we could easily contact and retest them during their remaining years at the university.

A final advantage was that the use of algebra is relatively easy to identify; that is, students should be able to remember the situations and frequency with which they used algebra in the interval between learning the material and taking the retest.

Aside from the above methodological and practical considerations, we found the question of whether students retain algebra to be interesting in and of itself.

Techniques for Assessing Domain Knowledge

We next faced every teacher's dilemma: How are we going to test what students know? We not only wanted a general summary score of a student's knowledge (such as percent correct from a test), we also wanted to identify the types of questions a student had difficulty with and, more importantly, the types of information which were forgotten. Further, we wanted to obtain information about students' experience with algebra prior to taking the algebra course and their use of algebra in the interval between the end of the course and a later retention test.

In Bahrick's (1984) study of Spanish, he used two sources to obtain the type of data we desired. First, he developed a test of various aspects of Spanish, such as grammar, vocabulary, and reading comprehension. Remember that Bahrick's study was cross-sectional, so this test was used only at the time of retention, not to measure the original level of knowledge. Bahrick also developed a questionnaire to assess the level of Spanish originally attained (e.g., years of Spanish courses, final course grades) and how much subjects had used Spanish since taking their last Spanish course (e.g., was Spanish spoken at home, did they visit a Spanish-speaking country).

We used both of Bahrick's methods to gather our data. We developed a multiple-choice test of algebra knowledge based on the past research of students' errors (which were used to construct incorrect choices on the exam) and task analyses of algebra. Because we were using the longitudinal method of testing students, we could examine their performance on this test before taking a course, after the course was completed, and later, after a period of time had passed. We constructed a *parallel* form of the test so that it could be used on more than one occasion. The parallel form contained the same questions as the original test, but had a different random order of questions

and different variable labels (e.g., p + q in the original test might be a + b in the parallel test).

We also developed a questionnaire which we gave to subjects after they took the retention test. As in Bahrick's questionnaire, ours had two subparts: one assessing previous experience with algebra, and the other evaluating use or maintenance of algebra between the end of the course and the retention test. The previous experience section requested information about the number of semesters of each college and high school math and science course students had taken which involved the use of algebra and their final grade for each course. The maintenance section of the questionnaire requested information about further courses involving algebra taken since the end of Math 101 and the frequency they engaged in everyday activities which involved the use of algebra (e.g., converting temperature from Fahrenheit to Celsius).

We recently became aware of a new method for assessing the structure of an individual's knowledge. In this method, which was developed by Johnson and Goldsmith (1988), subjects make pairwise similarity judgements between concepts in a domain (e.g., commutative property, distributive property for algebra). From the data obtained by these comparisons, the linkages between concepts are computed. Thus, one could find that one concept is strongly connected to many other concepts in the domain, whereas another concept is relatively unconnected with the rest of the domain. This method is clearly applicable to testing our hypothesis regarding the effects of information integration on memory. We hope in the future to study students' structures of algebra knowledge using this method.

Conducting the Experiment

Our next consideration involved recruiting the subjects for the experiment, and getting permission from the course instructor to conduct the experiment. The choice of a course was easy; Math 101 at the University of Colorado is the beginning level College Algebra course, and a large number of students are typically enrolled (over 100). We contacted the instructor for Math 101, Professor Robert Ellingwood, who thought our project sounded interesting and worthwhile. He helped us develop the testing procedure, allowed us to give the test during one of the students' regular class periods near the end of the spring semester, and counted the score on our test toward the students' grades. Thus, this exam was taken in a normal testing situation for the students.

We subsequently retested students in the fall semester, approximately six months after they had completed the Math 101 course. This retesting was done with small groups of students either in a classroom (not their original classroom) or in our laboratory. Inducing students to come in for retesting constituted the greatest difficulty of our study. Several factors contributed to this difficulty. First, most of the students had been freshmen while taking Math 101 in the Spring semester. We attempted to contact them the following fall semester, but many students had moved and the new student directory was

not available until late in the semester. Even after the directory came out, many students' phone numbers were incorrectly listed. When we did contact students, not all of them were willing to return. Although we paid all the students who were retested, many students we contacted did not want to take the exam; others did schedule a time to return but then never showed up for their appointment. We were only able to get 15 students to return for retesting.

We tested a second sample of students taking Math 101 and attempted to remedy the problem of later contacting them. First, we asked them for their permanent (e.g., their parents') address as well as their current address. Second, we tested students taking Math 101 in the fall semester, and contacted them for retesting in the Spring of the same academic year, hoping that students would be less likely to move than they had been over the summer in the first sample of students. Twenty-five students from this second sample returned for retesting approximately five months after they had completed Math 101.

Results

We will examine two hypotheses in these data: first, well-integrated information (e.g., the procedures involved in manipulating equations) will be better remembered than less-integrated information (e.g., specific rules, such as the quadratic formula); second, knowledge gained during the course will be more susceptible to loss than knowledge possessed at the beginning of the course.

Subjects from the first sample generally showed little forgetting over the six months. The mean percentage correct on the end-of-semester test was 81.5, and the mean percentage correct for the retest was 80.3 ($t(14) = 0.6$, $p > .05$). See Table 1 for the mean percentage of students who answered questions correctly within each category (percentages are averaged over questions within each category). Note that some categories of questions actually *increased* in percentage correct from the end-of-semester test to the retest. This improvement may be due to the fact that students took our test near the end of the semester, but they continued to study after this test for their final exam in the course.

Although there was no overall decrement from the end-of-semester test to the retest, certain categories of information—for example, the quadratic formula, completing the square, and combining exponents of common terms—were lost. These three categories all involve memory of a specific rule which does not directly relate to other algebraic procedures. Other categories of questions—for example, simplifying expressions, order of operations, and cross-multiplication—showed no loss. Note that some of these categories also involve memory of a specific rule (e.g., for order of operations one must remember that multiplication precedes addition), but all of these procedures are usually performed in the same context of manipulating equations. For example, in the problem, "Find the value of x when y equals 10 in the

Table 1

Percentage of students correct for categories averaged over questions for Sample 1 end-of-semester test and retest (N = 15).

Category	Number of Questions	End-of-semester Mean % Correct	Retest Mean % Correct
Absolute Value	2	83.5	93.5
Associative Property	4	91.5	85.0
Combine Exponents of Common Terms	3	82.3	60.0
Common Denominator	7	76.0	80.1
Commutative Property	4	95.0	94.8
Complete the Square	2	73.0	63.5
Cross-multiplication	2	83.0	96.5
Distributive Property	2	96.5	100.0
Exponentiation	5	88.0	90.6
Factoring Equations	3	88.7	89.0
Law of Negative Numbers	2	30.0	33.5
Law of Signs	2	100.0	95.0
Order of Operations	2	56.5	66.5
Products	4	88.5	93.3
Quadratic Formula	3	55.3	44.7
Simplify Expression	4	56.8	61.8
Square Roots	2	93.5	90.0
Substitution Principle	3	100.0	95.0
Theorem of Zero	2	76.5	60.0
Trichotomy Law	2	96.5	90.0

equation $2/x + 3/y = 5/x$," the student must use the operations of simplifying the expression, using the correct order of operations, and doing cross-multiplication to solve the problem. Thus, the pattern of results is consistent with the hypothesis that relatively isolated pieces of information and skill were lost, while well-integrated information and skill were retained, confirming our first hypothesis.

We also wanted to compare our results to those of Bahrick's (1984) study of Spanish. Bahrick used a multiple regression method in which the students' level of Spanish achieved in school and maintenance of Spanish during the retention period were used to predict the retest score. In this way, he took into account individual differences among subjects. Bahrick found that the strongest predictor of the retest score was the student's course grade. He also found that the amount of maintenance of Spanish was not significantly related to the retest score. However, he noted that very few subjects practiced Spanish during the retention interval, so his data were not adequate to determine the effects of maintenance unambiguously. We found the same general results as Bahrick. Course grade was the strongest predictor of retest score; once the course grade was accounted for as a predictor, no other predictor (i.e.,

percentage correct on the end-of-semester test, frequency of algebra use during the retention period, whether the student was currently taking a math course, or number of previous math courses involving algebra) was significant. See Table 2 for the correlations between the retest percentage correct and each of the above measures. For the regression analysis, with only course grade in the equation predicting retest score, $F(1,14) = 29.6$, $p < .001$.

Table 2

Correlations with percent correct on the retest for Sample 1.

Measure	Correlation
Course grade	.84**
End-of-semester test	.73**
Frequency of algebra use	.32
Currently taking math course	−.03
Number of previous math courses	−.54*

*$p < .05$ **$p < .01$

We could not test our second hypothesis (what is known before the course is more likely to remain in memory than new knowledge) with the first sample of students, because we had no test of how much the students knew before Math 101. We gave our second sample of students a *pretest*, which was the same as the retest, at the beginning of the course. We used the pretest to determine what students knew before the course began, and to see if this was the information which was best retained after the course had ended. See Table 3 for the mean percentage correct on the end-of-semester test and retest for both Sample 1 and Sample 2 and on the pretest for Sample 2. There was a significant improvement in performance from the pretest ($M = 75.0\%$) to the end-of-semester test ($M = 86.2\%$, for the difference between tests, $t(24) = 7.7$, $p < .001$). The difference between the end-of-semester test and the retest ($M = 83.6\%$) was also significant ($t(24) = 2.1$, $p = .047$), and indicated lower performance on the retest. However, the mean decrement from the end-of-semester test to the retest was only 2.6%, which represents a loss of less than two out of the sixty questions. Therefore, although there was a small loss from the end-of-semester test to the retest, the overall performance remained fairly high (83.6% correct). In other words, we found that subjects learned a significant amount of information about algebra during the course, and they forgot a small but statistically reliable amount in the five-month period between taking the course and being retested. However, most of the information they learned was retained over the delay interval.

If prior knowledge is remembered better than new knowledge, one would expect that getting a question correct on the pretest would highly correlate with getting that same question correct on the retest; this prediction turned out to be correct ($r(58) = .87$, $p < .001$). This correlation was higher than

that between the questions on the end-of-semester test and the pretest ($r(58) = .81$, $p < .001$) and between the end-of-semester test and the retest ($r(58) = .81$, $p < .001$). However, note that all three of these correlations are quite high. We are currently in the process of analyzing the categories of questions for Sample 2 in a manner similar to that for Sample 1 to derive a more refined test of our prediction.

Although our results were similar to those of Bahrick and were in the direction of our hypotheses, researchers must always worry about the adequacy of their measures. We wanted to examine both the *validity* and the *reliability* of our multiple-choice test. Validity refers to how well the test examines the material it was intended to cover. Our first indication that we had a valid test was that the score on the test at the end of the Math 101 course was highly correlated with the students' grades for the course (a correlation of .82, for the subjects from Sample 1 who returned for the retest). Our second indication of the validity of our test was that the course instructor had examined

Table 3

Mean percentage correct for students in Sample 1 and Sample 2.

		End-of-Semester	
	Pretest	**Test**	**Retest**
Sample 1			
Mean		81.5	80.3
Std. Dev.	Not Given	8.8	9.9
N		15	15
Sample 2			
Mean	75.0	86.2	83.6
Std. Dev.	9.4	6.0	7.5
N	25	25	25

the test before we gave it to the students, and he not only said it was a good test, he also counted it toward the students' grades.

Reliability refers to the consistency of the scores that a student achieves when taking the test repeatedly. For example, if a student scored 89% correct on a test, then took the same test two days later and scored 60% correct, the reliability of the test would be questionable. Also, we would expect students taking the same course to respond fairly consistently on a test. If we randomly placed the students into two groups, we would expect the number of subjects who incorrectly answer a question to be approximately equal in the two groups if the test is reliable. The notion of randomly placing subjects who have taken the same test into two groups and testing for differences between the groups is one of several possible ways of testing reliability. For the end-of-semester test in the first experiment, we performed

this type of reliability test and found a significant correlation when examining how many students got each question correct ($r(58) = .92, p < .001$). Another test of reliability would be to see if the number of subjects getting each question correct was the same for the end-of-semester test for the first and second samples. This correlation was also significant ($r(58) = .97, p < .001$), confirming that our test was reliable.

Conclusions

We found evidence for the hypothesis that well-integrated material is better retained than relatively isolated information. However, our determination of "integrability" was based upon our own intuitions of the circumstances under which algebraic procedures are used. We would like to have a more objective way of measuring integrability. We plan to use the Johnson and Goldsmith (1988) method to determine empirically which procedures and information are highly integrated with a broader system and which are more isolated.

We also found some evidence that questions which could be answered correctly before the course were retained after the course and that questions answered incorrectly before the course were more likely to be forgotten. We hope to strengthen this claim through an analysis of the categories of questions which show one of these patterns.

It was also interesting that our best predictor of retest score was the final grade for the course, as Bahrick (1984) had found. This is encouraging news in that the current method of evaluating students (i.e., instructor-determined course grades) has validity in predicting how well the students will remember the course material.

There is currently great concern on college campuses that courses and instructors, as well as students, should be evaluated. One would hope that students come away from a course with knowledge that they will retain for a long period of time. However, it is often difficult to determine how well instructors have achieved this goal. Our methodology for studying the long-term retention of knowledge is applicable to many disciplines other than algebra. We hope that it can be used not only to determine the types of knowledge which are susceptible to loss, but also to let instructors know some methods for providing students with knowledge which will last long past the final test.

Author Notes

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Teaching Anthropology: Writing Captions for the Blind

A. J. Kelso

Once, a long time ago, I heard Kenneth Boulding say "anthropology is stories about the strange customs of strange people." Clearly, Boulding has an opinion about anthropology, and I suspect you do too. If you were students, if this were the first day of an introductory class, and if I asked you what anthropology is about, you would have some answer. Few, if any of you, in other words, would be so blunt as to say, "How should I know what anthropology is, Teach? Here it is the first day and there you are expecting me to know it all already? Ain't that what you're supposed to tell us?"

You would not say that partly because good students know well enough not to talk to professors like that, but also because over the years some notion of anthropology has seeped into your consciousness from the media. (I have this mental image of a brain marinading in a media sauce.) TV, magazines, and newspapers tell us what anthropology is all about, and the picture they present is a colorful, if chaotic, mosaic. Through the media, the public (that part of it over 35 anyway) learned about anthropology in the work of Louis Leakey when they heard about his discovery—or more precisely about his wife Mary's discovery—of the extraordinary *Zinjanthropus* skull in Olduvai Gorge; we learned about his lifelong search for the earliest evidence of "true man," and the many who heard him lecture knew him to be every bit as compelling as the very best TV evangelist when he rose to preach his gospel of human origins. I suspect one of Leakey's lectures triggered the imagination of a young Steven Spielberg. The public learned from Leakey that anthropologists, some of them anyway, are seekers of the lost treasure of human origins.

We also learned about anthropology from media coverage of Margaret Mead, who told wonderful stories about the idyllic sexual behavior she found among South Pacific Islanders. Through the media we learned about Jane Goodall and her "wild chimpanzees." And we learned about anthropologists who train apes to use the hand gestures of American Sign Language. We learned about other anthropologists who discover buried remnants of lost civilizations, and

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still others who study the lifeways of "Stone Age People" such as the Tasaday, whose "remarkable discovery" in the Philippines some 16 years ago appears now to have been deliberately staged.

In other words, we learned that anthropologists do a lot of different things. So Kenneth Boulding spoke the truth, though not the whole truth, and you would too though your response might be very different from his. Anthropologists do all these things, and, to most of us, what anthropologists do is equivalent to what anthropology is.

But buried beneath the surface of this jumbled mosaic lies an implication about anthropology that concerns me more and more as time goes by and it is that implication that I want to talk about today. If you were to replay the media stories in your mind again and again, after a while you would begin to hear a subtle underlying theme which recurs in each one. At the same time that you are listening to stories about what anthropologists do, you are also learning that anthropology, though fascinating and interesting, is about the rare, the exotic, the remote, or, as Boulding put it, the strange. You would learn, in other words, that anthropology, though it claims to study human beings, is not about you or me. Anthropology is about other people, even about other species, remote from us in time or place, or both. Anthropology is portrayed as an intellectual luxury, a pleasant distraction from the rat race, an interesting pastime far removed from the practical day-to-day issues that press upon our lives. When it comes to relevance for our own lives, my field appears almost devoid of redeeming social value.

So we learn early to expect nothing of practical importance to come from the study of anthropology. State legislators, Commissioners of Higher Education, regents, presidents, vice presidents, chancellors, vice chancellors, deans and faculty colleagues carry this stereotype around in their heads as they make important decisions, some of which, as they say, have "resource implications." Like you and me, these people know what anthropologists do; and therefore, like you and me, they know what anthropology is. Students too expect to learn nothing useful in a course on anthropology, and each year a few of those students self-fulfill the prophecy when they go on to become professional anthropologists.

That is not the way it was supposed to be. Listen to these words which conclude the first textbook in anthropology. It was published in 1881 and written by E. B. Tylor:

> Readers who have come thus far need not be told in many words of what the facts must have already brought to their minds—that the study of man and civilization is not only a matter of scientific interest, but at once passes into the practical business of life. We have in it the means of understanding our own lives and our place in the world . . . more clearly than any former generation. The knowledge of man's course of life, from the remote past to the present, will not only help us to forecast the future, but may guide us in our duty of leaving the world better than we found it.

Tylor's view of anthropology is not very different from our own except as it pertains to ourselves. We too think of anthropology as a science and we have found it helpful in understanding why other people in other cultures and other times behave as they do, but we have not been able to carry that understanding very far into what Tylor calls "the practical business of life."

Anthropologists, for example, have found a connection among some tropical forest agriculturists which seems to link their annual round of ceremonial feast to natural fluctuations in the availability of protein in their diet. Could the timing of the feast be triggered by scarcity in the natural protein sources? The answer appears to be "yes," a highly qualified "yes," but "yes" nonetheless. An intriguing possibility certainly, but how might such a finding be used, as Tylor put it, to "guide us in our duty of leaving the world better than we found it"?

Or consider the case of Kuru, a paralytic disease which kills only adult women and children of both sexes, among Fore speaking people in New Guinea. For a long time Kuru was simply an enigma. As it turns out Kuru is caused by a virus which infects the brain and is transmitted by cannibalism. Women and children among the Fore are cannibals, whereas men, fearing the practice might diminish their masculinity, are not. How wonderful the insight this provides and how practical the value of the discovery to the people, but again how might we make use of such a discovery in understanding ourselves more clearly? Or finally, what practical benefit might we derive from the discovery that children in some cultures call many women "mother," and by doing so, appear to add appreciably to the likelihood that the young will survive to become adult?

Clearly the study of anthropology helps us understand why others behave as they do, but when it comes to looking at ourselves from the same perspective we simply fail to see anything. The experience is, I suspect, similar to what it would be like if we stood in front of a mirror watching others moving about in the background but were unable to find our own reflection at all.

This failure to see ourselves, this course blind spot, stems, I believe, from our incapacity to think of our own behavior as caused by the conditions of our lives. We seem, in other words, able to see the behavior of strangers as the result of cause and effect, but when the lens of science aims subsequently at ourselves we see nothing at all.

As Tylor observed, anthropology is a science and what that means is that anthropology seeks to understand human nature (our nature as well as everyone else's) in terms of the laws of nature. To begin such an effort we have to make an assumption which is easy to make when we are speaking about others, but difficult, if not impossible, to accept when we are referring to ourselves. As scientists of human nature we must assume that our behavior is regulated by the same natural forces as those that regulate the behavior of material systems throughout the universe.

Anthropology is a science.

By itself this proposition creates no disturbance. At face value it means only that anthropologists look upon us in a way that is, as much as possible, the same as the way a geologist examines the earth's crust, an astronomer studies our solar system, or a botanist regards the primrose. And as long as anthropology does its looking some safe distance away from us, everything is OK.

But once we start bringing the matter closer to home we see much more to this proposition than what appears on the surface. Scientists know how liquids behave when they are cooled, how stars behave when they run out of fuel, how gases behave when compressed, and how stag deer behave during mating season. They explain these events as the effects of natural causes. Science, in other words, explains natural events in terms of other natural phenomena. The behavior of liquids, stars, gases, and deer express the harmony of cause and effect at work in the universe, but human behavior, and especially our own behavior, we learn as children, is special—different from everything else, not in tune with the harmony of the universe—and that is where our blindness begins. Human behavior, we learn very early, is different because it derives not from the natural ebb and flow of cause and effect at work in the rest of nature, but rather directly from within each and every one of us as the expression of the free exercise of human will.

We are used to viewing ourselves as being in charge, used to exercising our free will in choosing between right and wrong, used to regarding ourselves as the ones who make things happen, used to controlling our own destiny, used to thinking of ourselves as at the center of our world, and used to assuming that we alone are responsible for our behavior. We know, or think we know, that our own behavior, though doubtlessly influenced at times by circumstances over which we have no control, arises ultimately from the exercise of an inner will which is able to override environmental pressures whenever we wish it to do so. We call this free will, and free will is the special ingredient that makes us different.

To an anthropologist this view of ourselves as free and in control, the familiar and comfortable view I learned as a child, represents one of the few remaining vestiges of *anthropocentrism*, the egregiously arrogant, pretentious, and ultimately dangerous view we have of ourselves as the centerpiece of all creation. For millenia we thought of ourselves as situated quite literally at the center of the universe and indeed even considered our existence as the reason why everything else existed! No wonder pride comes first among the deadly sins. From Galileo's day to this day, the scientific view and the anthropocentric view of human nature have been locked in a bloody war and, while anthropocentrism has lost every battle, has even lost ground since Tylor's time, our current view of ourselves as free and in control, as prime movers, stands as its last remaining stronghold.

Anthropocentrism may make us feel special and all runny inside, but it

is not the view science takes of us. To the anthropologist, human behavior, like the behavior of matter to the physicist, is the response human beings make to the constantly shifting challenges of the present moment. These challenges are not pressures that force us to act against our will, nor are they forces which make us choose in ways we would not choose if we were free; on the contrary, these are the conditions out of which our wills are forged and our choices are made. What is choice if not an expression of our will, and what is will if not the expression of our experience?

But that is determinism.

Of course that is determinism, and we need to deal directly with determinism because our incapacity to accept it is the reason we cannot find our own reflection in the anthropological mirror.

Why is it so difficult to accept determinism as a way of understanding why we behave as we do? Because determinism contradicts everything we have been taught since childhood. Determinism is as obviously false to us as the fact that the earth revolves around the sun was obviously false to 16th century Italians. How could anyone accept a view of human nature that rests upon the apparently preposterous assumption of determinism?

To answer that question we have to look closely at the two main arguments against determinism. One argument says that determinism in human behavior must be false, because, if it were true, then we could not make choices and nothing we do would matter since everything is determined. But the facts of our everyday experience confirm over and over again that we make choices all the time, and that what we do makes a difference—it matters—to ourselves and to others in our sphere of influence. We influence friends, family, even complete strangers, and again we do so all the time. These are facts we experience every day and no one, not even the most devout determinist, disputes them. How then can one be a determinist when the facts appear so overwhelmingly to contradict determinism?

What is wrong here are not the facts; what is wrong with this as an argument against determinism is that it confuses determinism with fatalism. We think of these two views of the world as essentially the same, so when we can reject fatalism we figure we have also rejected determinism. The real surprise comes when we discover that determinism and fatalism are not merely different views of this world, but are, when it comes to choice and the effects of our behavior, *opposite* views.

On the one hand, determinism implies that, while we make choices all the time, those choices are caused and have consequences. On the other hand, fatalism implies that what we do counts for nothing, that our entire lives are like parts in a play written by Destiny; we choose as we must and we speak whatever lines are ours. Nothing we do or say changes the script or alters the ending.

A fatalist watching us here in this room now, though perhaps amused by the experience, would tell us that nothing we do here today will make the

slightest difference in our lives. A free willer would tell us that each of us is free to choose individually (and independently of past experience) what effects, if any, the experience of this moment will have on us. A determinist would say that the experience must have an effect on each of us, but the effect is due as much to the present conditions as it is due to what I say. To a determinist, choice is always both an effect and a cause, always an intersection between the individual's past and the context in which the choice is made.

When separated from fatalism, determinism, far from contradicting the facts, is entirely consistent with our everyday experience. We observe ourselves making choices and influencing others, and being influenced by them, all the time. Separated from fatalism, determinism becomes familiar, easy to confirm, and much easier to accept. All advertising, all teaching, all parenting proceeds from the assumption that choices are caused and produce effects.

The other argument against determinism, and therefore against a science of human nature, is that a determinist view seems to relieve the individual from having to take responsibility for what he or she does. The argument runs as follows: If the choices we make express conditions around us, and if the conditions around us are beyond our capacity to control, then how can anyone ever be held accountable for the choices he or she makes?

First, note this is not an argument against determinism *per se*. In fact this is no argument at all. It is rather a question that expresses the self-contradictory fear that accepting determinism would unleash people to do as they please without ever having to take responsibility for what they do.

But if having to take responsibility for what we do means we have to take the consequences of our behavior, then, once again, determinism is wholly consistent with the notion of responsibility. A world regulated by cause and effect is a world that provides no escape whatever from the consequences of our choices than we do under an assumption of free will. Moreover, we limit the effects to ourselves; as any parent knows, as any victim knows, as anyone who has ever been in love knows, others feel the effects of what we do, sometimes with greater force than we feel them ourselves. If the consequences of what we do match our expectations of what is right, we say that justice has been done.

In other words, we fail to see ourselves in the anthropological mirror, not because some special quality makes us invisible, but rather because of our incapacity to accept our own behavior as the expression of causes to be found in the conditions of our lives, an hysterical kind of blindness to determinism with causes of its own rooted in centuries of anthropocentrism and fear. Anthropology, in my opinion, has much to show us about ourselves if only we can overcome this blindness, or, in other words, if only we can see ourselves as we see others.

So close your eyes for a moment and imagine you can see.

What do we look like when we see ourselves in nature? The first reaction to such a sight might well be a mixture of disappointment and relief. Dis-

appointment comes upon finding that a scientific view of human nature lacks the richness, the color, the depth and the fullness we find in the glimpses we get from literature, art, and music. Science simply cannot, at least not yet, offer us anything like the intensely passionate portraits of human nature we get from Joyce, from Donatello, from Ella Fitzgerald, or from U2. But the good news is that the view from science is not nearly as bleak as we might have expected. True, it does not portray us as the centerpiece of all creation, but then neither does it represent us as mere robots programmed by destiny. An anthropological view shows us that what we do matters, that we are an important part of this place and time, and reminds us also that our roots descend back to the beginning of time and that our influence will last to the end of time.

Once we get beyond first impressions, however, not only are we able, perhaps for the first time, to look upon ourselves as we look upon others, we are also able to see, albeit somewhat dimly, what Tylor saw clearly over 100 years ago, and that is "how the study of man and civilization is not only a matter of scientific interest, but at once passes into the practical business of life."

Take, for example, one of the first and most obvious things we see, which is that we are primates. In our natural setting we belong with the monkeys and the apes. Now we may be prepared to acknowledge in a vague sort of way that we are animals (especially since the only available alternative is a plant), but with an anthropological perspective we see with unmistakable clarity that we are primates, or, as E. A. Hooton put it almost 50 years ago, we see that "somewhere in our family tree squats an ape." We are, in fact, much more closely related to gorillas and chimpanzees than gorillas and chimps are to any other primate!

For many of us this is a fact we simply cannot accept as true even for others, and, for some of us especially, not a fact we can accept as true of ourselves. But in denying what we see here, not only do we remain invisible to ourselves in nature, we also fail to appreciate the contrast between how *similar* we are to other primates in many of our biological features, and how *different* from them we are in the way we live, and it is what we find by looking closely at this contrast that may be useful to us in the present.

If we look closely into what it means to accept ourselves as primates, we find out something interesting about who we are and where we come from. We discover that we are the descendants of a line of mammals that over the last 60-70 million years has grown more curious, more playful, more attentive to its young, more intelligent, and more adept in adapting to complex environments. We are, in fact, very good illustrations of generalized primates in these features, but what is really interesting, at least to me, about what we see in this close inspection is the vast difference between what we think of as normal human behavior in ourselves and what we know as normal behavior in other primates.

The contrast could hardly be more stark. Since their beginnings, the primates, our ancestors, have lived out their lives within a small territorial range in more or less continuous contact with the same few individuals throughout every hour of every day. We, however, live out our lives in immense urban centers from which we can, and some of us often do, move frequently and easily across vast distances from one group of associates to another, out of range and out of contact with friends and kin for long periods of time. Primates are social animals; we value individuals. Primates rely for survival on others; we teach our children to make it on their own. Primates learn by doing, by playing, by experimenting and by watching others in the normal course of their everyday lives. No other primate learns anything sitting in a room listening to someone read a speech. Other primates might, if they could talk, say that what we do here today is an unnatural act.

Primate social groups, when they succeed, provide a secure and stable context for bearing offspring and nurturing infants. Every member contributes to the care of the young in some significant way. This is what primate social groups are about and the ultimate reason they vary in structure from one location to another. Our social system, by contrast, is organized around the requirements of commerce, is stratified into social classes, undergoes rapid change all the time, and expresses an underlying value in satisfying the material needs of adults that is at least equal to, if not greater than, the value placed on the developmental requirement of youngsters. Among our kind, infant care, until recently, has been considered the sole responsibility of two people, and in recent years the responsibility has shifted with increasing frequency to one person, almost always an adult female, or to childcare specialists outside the family. In a word, primate society centers on fulfilling the survival requirements of infants, whereas ours centers on gratifying the material necessities of adults.

I am not certain what, if any, general inferences may be drawn from this comparison. Perhaps, as some students in my class this semester say, the differences between us and other primates simply illustrate the progress we have made over our ancestors. Or perhaps, as I suspect, the differences show us how far culture has stretched our biological limits beyond their natural shape, a form forged out of millions of years of adaptation with an evolutionary lineage which, for most of that time, included the ancestors of our close relatives as well as our own ancestors. However one interprets its meaning, the contrast is nevertheless useful here because, in examining the seams between human primate biology and culture, we begin to see how an anthropological perspective provides us at the very least with a different view of ourselves, one we may never have seen before and one that is strikingly different from what we are used to looking at.

Let me offer one more illustration of an anthropological perspective in a completely different context. This time I will focus on public education. A moment ago I spoke of the seam between primate biology and culture and

want to carry the notion of "seam" into this illustration as well. When we can look at our behavior from the perspective science has, in other words, the outcome of cause and effect, then, like geologists reading fault lines on a map, we are prepared not only to recognize seams between biology and culture, as in the comparison between ourselves and other primates, we can also see the friction created as massive old cultural institutions, formed by forces that existed a long time ago, collide with institutions created out of pressures which have gathered only recently.

We can, once we find our image in the anthropological mirror, see just such a seam in our educational system. Our school system took on its basic form at a time when the overwhelming majority of Americans lived on farms. This fact continues to be the main reason why children go off to school at the age of 5 or 6, why the school day begins between 8 and 9 a.m. and ends around 3 p.m., why the school year begins in late August or early September and ends in late May or early June, why school holidays are spread somewhat randomly throughout the year, and possibly the reason why teachers are compensated at a lower rate of pay than plumbers or lawyers. At the time when these became fixed features in the structure of public education in America, new lands were being settled, new marketplaces were opening up, families were large, divorce was uncommon, life expectancy was between 35-40, single parent households were rare, men went out to work in the fields and women stayed at home, and community values were clear and slow to change. The local school served primarily as an adjunct to the household, transmitting to the children of a community what were then the fairly uniform values of adult society.

The school system of the past failed to serve well the developmental needs for children even then, and today serves neither children nor parents well. Yet our approach in dealing with the problem, one based firmly on the familiar anthropocentric and free will view we have of ourselves, is to look for blame. We blame parents, and at times we even blame the children themselves. With a scientific perspective we see that blame is merely a way of avoiding the search for underlying causes of the problem—everyone involved can point the finger of blame at one another, and, as they do, the conditions either stay the same or, as appears to be especially evident in the school systems in large metropolitan areas, grow worse.

Our educational system took its basic shape under cultural conditions that passed out of existence by the turn of this century and simply fails even to begin to address the educational requirements of a generation of youngsters who are growing up at a time when the U.S. has lost its ability to compete successfully in the world's marketplaces. This realization, it seems to me, necessarily changes our view of the problem and, therefore, our approach to its solution. While we do not need to be trained as specialists in anthropology to find the seams, the approach of anthropology can be helpful in such a search. We do not need to look far to find other such "old" institutions.

Tylor, by the way, had names for them; he called them "cultural survivals." The nuclear family, agriculture, trade unions, political parties, and warfare come to mind immediately.

Mainly what I wanted to do in writing this article is, first, to explain why I think it is a mistake to dismiss the study of anthropology as merely "stories of the strange customs of strange people," and, second, to show how the study of anthropology connects directly to our lives in the present. In other words, what I wanted to do in writing this is what I always hope to do as a teacher of anthropology.

Yet all I have said is that anthropology enables us to see ourselves as we see others. Now, merely examining ourselves from another angle, as pleasantly narcissistic as we may find the experience itself, does not sound like an especially practical way to cope with today's problems. But, as implied by determinism, taking a different view of ourselves and how we fit into our surroundings inevitably means relating to one another and those surroundings in a different way! Different relationships generate new (my hope is more harmonious and more humane) possibilities for resolving the problems that press upon our lives. Indeed, taking another view of ourselves may be the most important practical contribution anthropology can make and possibly the most precious gift our generation can leave for our children.

I am moved to say these things because I have become more and more uneasy about what we seem to be leaving our children, and to me that makes a discussion of our blindness almost an urgent necessity. We travel comfortably and quickly from one place to another, yet as we travel what we leave behind for our children is an atmosphere that grows more suffocating each year. We can expect to live 10 years longer today than we could have expected 20 years ago, yet as our life expectancy soars so too does the number of persons devastated by the cost of living longer and humiliated by the helplessness and loneliness that so often accompany the later years. We buy more things than any previous generation, yet the debt we have generated in our buying spree represents a staggering burden which our children, it appears, will have to repay. And every day, it seems, we add to an already abundant supply of nuclear weapons, and, though more expensive, today's weapons, we are assured, are better than yesterday's because today's are more accurate, more destructive and more deadly. We make more and better weapons to feel more secure at home, yet as our arsenal grows we have become less safe abroad, and what we really feel at home is a mounting fear that someday the weapons will be put to use.

What are we to do? We can do again what we have done before. That is, we can, as our children watch and listen: deny that a problem exists, have faith, do nothing, blame others, feel guilty, contribute money, write our Congressperson, take a stand, write letters to the editor, hijack a plane, grab another hostage, live it up while there is still time, form a new committee, support an existing group, take the bastards to court, become well-informed, work

to help others become well-informed, join a peace march, protest nuclear testing, go to jail, starve ourselves in public, or move to one of the few remaining remote places with strange customs and strange people.

Or maybe someday we will open our eyes and see.

Do Professors Need Professional Ethics As Much As Doctors and Lawyers?

James W. Nickel

University faculty have not given much attention to ethical issues in teaching and research. There is a large literature on academic freedom, but little on academic responsibilities.[1] No journals are devoted to technical issues in academic life, and no one teaches courses to graduate students aspiring to academic careers about their responsibilities as teachers and researchers. In contrast, medical ethics is an established area of moral and political inquiry. There is a large literature on medical ethics, with a number of journals dedicated to it. Many medical schools have increased their offerings in medical ethics, and many hospitals now have "ethics committees." The situation in law is similar. The ABA has codes of ethics for lawyers and judges.[2] Law schools are required to offer courses in legal ethics. And a substantial literature exists on the ethical dimension of lawyering.

It is tempting to view the relative neglect of ethical issues in university teaching and research as stemming from the professional arrogance and hypocrisy of university professors. Arrogance might be seen in the implicit assumption that the ethical standards of university faculty are sufficiently good that they call for no special attention.

Hypocrisy might be seen in the willingness of professors—particularly philosophy professors—to write about legal and medical ethics while neglecting academic ethics. But this is only one possible explanation of why academic ethics has not received the same attention that legal and medical ethics have. In the first part of this paper I consider a number of possible explanations for this neglect. As part of this I will raise the question of whether academic ethics deserves more attention. My conclusions will be that the lack of attention by academics to ethical issues in their professions is not as self-serving as it initially seems, but that academic ethics is an area where intellectual and cultural development is needed. The second part of this paper offers a framework for understanding and developing academic ethics.

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What Explains the Relative Neglect of Academic Ethics?

There are a number of possible explanations of why academic ethics has not received as much attention as medical and legal ethics. In this section I present and evaluate these explanations.

A. *Faculty are self-serving in ignoring ethical questions in their own profession.* This explanation, which I referred to in the introduction, holds that the neglect of academic ethics by university faculty is best explained as a matter of serving their own interests in a hypocritical way. When a similar lack of attention to ethical issues existed in medicine and law, many academics were quick to attribute this to the professional arrogance and hypocrisy of doctors and lawyers. Perhaps this was a matter of seeing slivers in the eyes of doctors and lawyers while being blind to the logs in their own eyes. President Diether Haenicke of Western Michigan University recently expressed this view:

> It has, in my observation, been a longstanding practice of the academic professoriate to lecture others, but to refrain from lecturing its own constituency. I have not yet seen any of our colleagues lecture about ethics in academia. If there is a need for a reconsideration of ethical questions in the professions, why spare our own?[3]

No doubt there is some truth in viewing professors as hypocritical on issues of faculty ethics, but some of the ways in which it is an oversimplification will emerge as other possible explanations are considered.

B. *Academics have not experienced a crisis in public confidence.* The Watergate scandals caused a considerable amount of public concern about the ethics of lawyers, since President Nixon and several of those involved in the scandals were lawyers. Skyrocketing medical costs, and a consumer rebellion against imperious physicians stimulated public concern about the policies and ethical standards appropriate to medical care. Public concern directed to academics and their appropriate roles has never been this strong. There has been no similar crisis in public confidence concerning the ways in which university faculty go about their work.[4]

C. *There has been less technological change in the university than in medicine.* In the last fifty years, medicine has been substantially transformed by technological advances. New methods of dealing with health problems—from heart transplants to in vitro fertilization—have raised difficult issues about whether these methods are morally permissible, whether they are affordable, and how they should be distributed. It has been recognized that these issues should be addressed not only by doctors but also by intellectuals and by the public, with the result that many professors have written and taught about them.

Technological change has not affected lawyers and professors to a similar degree. Universities have enlarged and changed in many ways during the last fifty years, but this change has generally not been driven by technological advances. The area where this is most true is in teaching. Adjustments like

adding more seats to the room or substituting an overhead projector for a blackboard have not transformed the nature of teaching. Research, on the other hand, has been substantially changed by sophisticated technology. The equipment used in experiments has become immensely more complicated in many areas, with the result that researchers must devote a lot of time and energy finding funds for their research. And almost all researchers have come to rely on computers for gathering and processing data and for writing up their results. But this change in university research has not raised as many moral and political issues as technology-driven change in medicine.

D. *The consequences of academic malpractice are less grave than those of legal or medical malpractice.* To overstate the case a little, when doctors are incompetent or behave badly their patients die, and when lawyers are incompetent or behave badly their clients go to jail or lose their cases. But when professors are incompetent or behave badly their students merely are taught less well than they might have been, or knowledge is not advanced as much as it might have been. Because of this difference in the consequences of misconduct, it has seemed less imperative to focus concern on the ethical problems of academics. There is also an exception to this that proves the rule. In areas where there are clear victims of academic malpractice, namely human and animal research subjects that are abused, regulations have been developed.

E. *The temptations of professors are not as large or enticing as those of doctors and lawyers.* If a doctor performs three or four unnecessary surgeries a month, the return from these operations in the course of a year might be an extra $100,000. And if a lawyer can save a shady but profitable enterprise from prosecution or conviction, the rewards may be enormous. Professors, on the other hand, mostly work in an environment in which there are only small temptations present, such as going to a conference in New York because one wants to enjoy a weekend in the Big Apple, or getting even with an insolent student by giving her an undeservedly low grade. These temptations, along with other ones such as taking shortcuts in grading, not keeping up with one's subject, or going skiing when one should be doing research, are not to be belittled; but as instances of human vice and folly they are not extremely grave.[5]

All of these explanations are at least partly persuasive. Probably each of them has a part to play in a complete explanation of why academic ethics has received less attention than medical and legal ethics. The claim that professional ethics is more important for doctors and lawyers than for professors has some truth in it. If this is correct, then the lack of attention to academic ethics may be less self-serving and hypocritical than it initially seemed.

It does not follow from this, however, that the subject of faculty ethics does not deserve more attention than it has received. To show that A is more important than B is not to show that B is unimportant. And we should not misconstrue the last two explanations to conclude that the moral universe of the teacher-researcher is morally trivial.

More attention to ethical issues in teaching and research is indeed needed. If abuses by faculty members are not generally so serious as to count as felonies or so dangerous as to do severe harm to others, perhaps this means that a code of academic ethics need not be an imitation of the criminal law. Perhaps in formulating an academic ethic, we can give a bigger role to aspirations or goals and a smaller one to prohibitions and punishments.

A Framework for Understanding Academic Ethics

In this section I introduce a number of distinctions pertaining to the nature and role of a code of professional ethics. These distinctions will be used in the following section to present a general description of a plausible code of academic ethics.

A. *Ethics and codes of ethics.* It is important to avoid confusing the ethics of a profession with its written ethical code. The relation between knowing how to speak a language and having a written grammar for that language is probably a good analogy. Just as good speakers commonly have no adequate written formulation of their competency, ethically admirable professionals may have no adequate formulation of the standards they live by. Patterns of ethical behavior are often taught by example rather than by elaborate precepts. The operation of standards of behavior may not be apparent to those doing the behaving, just as the rules of grammar that describe an excellent speaker's competency may not be known to the speaker.

The idea of a written code of conduct for a profession, however, is far from new. This idea has been exemplified in medicine by the Hippocratic oath for over two thousand years, and lawyers have had written codes of ethics for the past two centuries. Although university faculty could profit from a well-formulated and implemented ethical code, the analogy with formulating a grammar should remind us of the difficulty of constructing a code that is adequate in representing the operative ethical standards of a profession.

B. *Possible goals of codes of professional ethics.* A code of professional ethics can focus on:

1. *Minimal standards or disciplinary rules.* These are standards whose violation can get one dismissed, defrocked or disbarred.
2. *Standards of reasonable performance.* These identify the kind of performance that makes a person worth hiring or keeping as a professional.
3. *Standards of truly excellent performance.* These identify performance that realizes our aspirations and ideals, that qualifies one for recognitions and awards.
4. *Important general principles and goals.* These guide behavior in areas that are not covered by familiar patterns of practice or by existing codes of ethics. They may express what a profession takes its central purposes to be.

A code setting out minimal standards and a code setting out general principles and goals would be very different documents. It is not clear which

of these four areas a code of academic ethics should attempt to address. It is possible, of course, to address two or more of these concerns in a single code.

C. *General and specialized norms.* The behavior of university faculty is guided both by the general mores or norms of society as well as by the specific norms of university faculty and their disciplines. By "norm" I mean to cover all kinds of standards, prescriptions, rules, principles and goals. A general norm, such as the prohibition of theft, applies to everyone in society. A specialized norm, such as a prohibition of inventing experimental data, applies only—or mainly—to people whose study or work involves scientific experimentation. One might expect that a code of professional ethics for a discipline would include no general norms, but instead consist entirely of specialized norms focused on the work of that discipline. This, however, is too simple a view, since the violation of certain general norms may be especially tempting to members of a particular profession. Thus we need three categories.

1. *General norms that require no special emphasis in connection with a particular profession.* Codes of professional ethics for lawyers do not generally include prohibitions of murder. Everyone has the duty not to murder, and experience has not shown lawyers to be especially tempted or inclined to murder. Thus there is no good reason to include this norm in a code of ethics for lawyers.
2. *General norms that need special emphasis in connection with a particular profession.* Everyone has the duty to avoid fraud, but perhaps accountants are especially likely to be tempted to commit fraud given the nature of the work they do. They may be tempted, for example, to help their clients gain bank loans by preparing fraudulent statements of net worth. If this is correct, then it would be appropriate to include in an ethical code for accountants a prohibition of fraud. Special temptations, however, are not the only reason for connecting a general norm with a particular profession. A general norm might be included in a profession's ethics code because it expresses the distinctive values of that group.
3. *Specialized norms of a particular profession.* These norms are unique, or nearly unique, to a profession. Specialized norms for lawyers will be mostly different from specialized norms for professors. These norms pertain to offenses that only members of a particular profession can commit because only they have the positions, powers, privileges or duties that make these offenses possible. For example, a norm prohibiting false arrest is a specialized norm; it only applies to law enforcement officers and others with the legal power to make arrests.

It is sometimes difficult to decide whether a norm fits in category two or category three. This may depend on how we describe it. For example, a prohibition of using someone else's ideas without attribution may fit in category three if we describe it as plagiarism, but in category two if we give it the more general description of theft. This example also illustrates that some

specialized norms apply to more than one profession. A norm forbidding plagiarism might be appropriate to professional codes for professors and journalists, but not to codes for accountants or doctors.

Applying the Framework to Academic Ethics

The distinctions made in the previous section raise some questions about how to proceed if we want to give more attention to academic ethics. The distinction between ethics and codes of ethics raises the question of whether developing and implementing a written code of ethics is the best way to proceed. The distinctions between four possible goals of code of faculty ethics raises the question of whether we just want standards for disciplining people who behave very badly or whether we want to include standards of excellent behavior and aspirations and ideals. And the distinction between generalized and specialized offenses raises the questions of whether there are any general offenses that faculty are especially likely to commit and whether there are specialized offenses that are made possible by the roles, powers, privileges and duties of university faculty.

If we can answer these questions, then we will begin to have some idea of what form increased attention to academic ethics might take. I don't have space for full responses to these questions, but I'll offer some brief responses that I think plausible.

A. *Do we need a code of ethics for university faculty?* If properly constructed and applied, a code of ethics for university faculty would be useful. Such a code could help educate faculty and students about academic standards and goals, give department chairs and deans some authoritative standards to appeal to in dealing with colleagues who behave or perform badly, and offer the public some assurance that ethical issues in university life are recognized and taken seriously.

The process of deliberating about and formulating a code of ethics for university faculty would itself be useful, quite apart from its outcome, since such deliberation would enrich our intellectual and cultural resources in this area. This process might occur at the national level through organizations such as the AAUP and through disciplinary associations such as the American Historical Association. At the local level it might occur within the faculty organizations of particular universities.

Our earlier analogy between a written ethical code and a written grammar reminds us, however, that people can speak and behave perfectly well without having or knowing any written formulation of their linguistic or moral competency. Further, an ethical code that is badly formulated or administered may contribute little or nothing to good conduct. Constructing and implementing an ethical code is worth doing only if it can be done well.

The analogy between a written grammar and a written moral code is misleading in at least one way, namely that there is probably greater diversity in moral beliefs and attitudes in American universities than there is diversity

in the linguistic patterns of educated speakers of American English. This diversity may itself provide a reason why it is worthwhile to make an effort to formulate common standards of acceptable conduct.

B. *Are there general offenses requiring special emphasis in the university context?* I think that the answer to this question is affirmative. Sexual harassment is an example of a general offense that ought to be given attention and emphasis in the university.[6] We might characterize sexual harassment as using one's position or influence to induce a person in a subordinate or less powerful position to behave in ways one finds sexually gratifying. This is a general offense since it is possible in almost any area of life or work. It deserves emphasis in the university context because students are in a stage of life in which they are sexually attractive and interested in relationships and because faculty are often in a position to take advantage of their role and power for sexual purposes.

Other general offenses might be included not because they are more likely to occur in a university but because they connect with the role of the university or with values that academics emphasize. One example is a norm prohibiting lying, fraud and slander. These all involve persuading people of things that are known by the speaker to be false—and this type of persuasion is especially inappropriate in an institution committed to the pursuit of truth and knowledge. Another example is discrimination based on race, gender, religion, or social class. This offense is worth emphasizing in a code of university ethics not because faculty are especially likely to engage in such discrimination, but because it is especially repugnant in an institution whose appropriate test for admission is whether someone is committed to and capable of a quest for knowledge and, more specifically, committed to and capable of pursuing the goals of particular disciplines such as biology or English literature. Michael Walzer put this as follows: "If the teachers see a likely student, they take him in. At least, that is the way legendary, and therefore ideal, teachers behave; they ask none of the conventional questions about wealth and status.[7]

C. *Specialized offenses.* To see how faculty life admits of specialized offenses we have to inquire into the position, powers, privileges and duties of faculty members. This is to ask whether the distinctive roles of faculty members make available to them offenses that are not available to the general public. Here we need to remember my earlier warning that which of these categories an offense fits into may depend on how abstractly we describe it.

One way of conceiving the ethics of a profession is in terms of preventing abuses of the distinctive privileges that members of that profession have. Kenneth Kipnis suggests this view in his book *Legal Ethics*.[8] Kipnis emphasizes, for example, the attorney-client privilege of confidentiality and ways in which it can be abused. But we should attend not only to the misuse of professional prerogative, but also to the failure to meet distinctive professional responsibilities. This broader approach looks at a profession's special liberties, powers

and rights (the benefit side) and at its distinctive duties, responsibilities and liabilities (the burden side).

To follow this approach, we can try to identify the distinctive privileges and responsiblities of university faculty members. University faculty are both teachers and researchers; we can expect them to share some privileges and responsibilities with both teachers outside the university (e.g., public school teachers) and with researchers outside the university (e.g., researchers working for government agencies or private firms).

1. *Teaching.* The responsibility of the university teacher is to help students acquire advanced levels of knowledge and competency. To provide such help in an effective way, one must have and maintain an advanced level of competence in one's field. Keeping up with one's field is often difficult, and one may be tempted to give up the struggle. Because of this, a code of faculty ethics should emphasize the teacher's responsibility to devote sufficient time to activities such as reading, laboratory work, research, scholarship, conversing with colleagues, and attending conferences. Knowing one's field is not, of course, sufficient. One also has to be able to communicate this knowledge or competence to one's students. Here a code of faculty ethics could emphasize the teacher's responsibility to acquire and practice effective teaching procedures.

The privileges of a university teacher include: (a) having *access to people's minds* during a formative period; (b) setting the syllabi and choosing the texts for one's courses; (c) choosing how to teach particular class sessions. These privileges can be abused in a multitude of ways. Among the more obvious abuses are *indoctrination*, which we might characterize as teaching in a way that inculcates beliefs without exploring the grounds for those beliefs and possible objections to them. Another is *fostering the formation of a personality cult*, which we might characterize as glorifying oneself and slandering colleagues as a means to gratification and power; a third is *diverting class sessions* away from the subject of the course to extraneous topics.

2. *Research.* Abuses in teaching have received more attention than misconduct in research. There are a number of reasons for this. First, we have a lot of experience with the teacher-student relationship; nearly everyone in the United States has experienced it. The ethical dimensions of this relationship are consequently more familiar. Second, research does not have built-in observers in the way that teaching does. Research is a less public activity than teaching, especially at the moments when crucial results or data are found. Another way of saying this is that the teacher is generally much closer to his or her clients than the researcher is. Third, the mythology of science as value-free has discouraged inquiry into the ethics of research and kept us from giving full recognition to the moral and legal dimensions of this activity. We are beginning, I think, to recognize that adherence to appropriate values and norms is central to doing good research. To say the same thing in a more contentious way, scientific and scholarly activity presupposes values and norms.

The fact of limited development in this area should be put together with the fact that research is often an area of greater pressure in university life than teaching. In many universities, the academic game is won or lost in accordance with the success of one's research. Since we have not given much attention to this area, and since it is an area where faculty are under considerable pressure to succeed, perhaps it would be wise for academics to devote some time and energy to it.

We can follow the same strategy in thinking about the ethics of research that we followed in discussing the ethics of teaching. We can begin, that is, by asking whether there are any general moral principles that ought to be emphasized in this context, either because of special temptations or because these principles express something important about the activity. One principle, which is supported on both of these counts, is honesty in presenting one's procedures and results. Researchers are sometimes tempted to manufacture data, to fudge the data a little, or to exaggerate its significance. Thus it would be worth mentioning in a code of research ethics that scrupulous honesty is required in communicating one's results.

A second approach to thinking about research ethics is to ask whether the distinctive powers, privileges, or responsibilities of a university professor make it possible for him or her to commit distinctive sorts of abuses. Perhaps the most important privilege of a university professor in regard to research is having time with pay for doing it. A university faculty member is given time, and control over that time, so that he or she can pursue research questions that are worth answering and that suit his or her abilities and resources. The abuses here are obvious and familiar. One abuse is not making effective use of the time one is paid for, perhaps by spending too much time in the faculty lounge and too little time in the study, library or laboratory. Another is diverting this time to private ends. Here I have in mind something like using one's afternoons to run a real estate business or to develop one's skills as a rock climber.

A second privilege of university faculty members is to conduct their research in an environment that is fairly free from public scrutiny and regulation. It is a good idea to insulate the study or laboratory from extraneous influences so that researchers can follow their noses and judge on the basis of what they take to be the best evidence. But this privilege should not be a license, for example, to fudge experimental data or to inflict unnecessary pain on laboratory animals.

A distinctive responsibility of university researchers is to give a fair amount of credit to others for their work or ideas. Interestingly, this is a duty of fairness that, with honesty, is at the heart of scientific activity. The severest case of failure in giving fair credit is representing someone else's work as one's own. This is common enough to have an ugly name: *plagiarism*. Milder failures in this respect might involve giving someone else too small a share of the credit, as when a graduate student whose ideas are the basis for a paper

is relegated to second author, or giving oneself too much credit, as when one inflates the importance of one's discovery or publication in guiding or stimulating subsequent work.[9]

Notes

1. Exceptions to this are Steven M. Cahn, *Saints and Scamps: Ethics in Academia* (Totowa, NJ: Rowman & Littlefield, 1986); and "The Obligations of University Teachers," *Minerva XX* (1982), 105-212.

2. *Model Code of Professional Responsibility*, American Bar Association, Committee on Ethics and Professional Responsibility, 1969 with subsequent amendments.

3. Diether H. Haenicke, "Ethics in Academia," *Papers Presented to the Center for the Study of Ethics in Society*, Vol. 1, No. 2 (January, 1988), 2.

4. A sign that such a crisis may soon be upon us is found in the recent book by Charles J. Sykes, *Profscam: Professors and the Demise of Higher Education* (Washington, D.C.: Regnery Gateway, 1988). Dieter Haenicke suggests that such a crisis is occurring in "Academic Malpractice: The Need for a Code of Professional Ethics," *Perspectives on the Professions* (Newsletter of the Center for the Study of Ethics in the Professions, Illinois Institute of Technology), 9 (August 1989), 2-4.

5. Diether Haenicke rightly emphasizes that because of modest salaries many professors are likely to be strongly attracted by opportunities for consulting or for commercializing scientific discoveries. Pursuit of these opportunities sometimes leads to neglect of faculty duties or conflicts of interest. See Haenicke, 7-12.

6. See Haenicke, 4-7.

7. Michael Walzer, *Spheres of Justice* (New York: Basic Books, 1983), 202. See generally Chapter 8: "Education."

8. Kenneth Kipnis, *Legal Ethics* (Englewood Cliffs, NJ: Prentice Hall, 1986).

9. So that I do not commit the offense of giving myself more credit and others less than is due, I would like to acknowledge assistance with this paper from Ann Davis, Jackie Colby, Ken Howe, and Joseph Ellin.

Use of the Socratic Method

Marianne Wesson

What is the essence of an excellent Socratic class? There are of course infinite varieties, but all seem to me to share the qualities of a good novel: a good Socratic dialogue writes itself to some extent, the characters and ideas take on a life of their own, and at least occasionally we are surprised by what we encounter. A Socratic class that brings no surprises to its teacher is not truly Socratic, but a pale imitation in which the teacher manipulates the students into delivering the expected responses. Such a class is no more interesting, and considerably less economical, than a good lecture. In fact it is a lecture—by proxy. But the true Socratic dialogue is a genuine exchange, in which not only the students but the teacher as well must submit themselves to the possibility of failure, of not knowing the answer, of things not turning out exactly as intended, of points that might have been made not getting made, of information that might have been communicated not being addressed. These possibilities are frightening to us as teachers because we feel so heavily the responsibility of making the class go well. But our fear is useful, not only for the adrenalin rush it delivers, but because it generates empathy for the student, who is also very fearful (or so my students tell me). I think that no amount of gentleness can entirely quiet those fears—nor should they be quieted altogether. Probably few worthwhile enterprises are entered into without some initial trepidation. Learning—or teaching—at the edge of the "envelope" is challenging. The reward comes from meeting the challenge and proceeding in spite of the fear.

I believe that there are certain prerequisites to an excellent Socratic class. One is trust, another is reciprocity, and the third is a willingness to sacrifice some classroom values, specifically the "coverage" of material, to the great power of the process. Of course, whether or not one agrees with Allen Bloom, there are legitimate expectations in a university setting that certain materials will be discussed, conveyed, and put into the relevant perspective. This expectation suggests that not all courses should be taught Socratically, or perhaps that in any course there must be classes that are not taught Socratically, but rather taught by a method, such as the lecture, that lends itself better to the communication of the received wisdom about history, science, law, liter-

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ature, psychology, or whatever. But if we believe in the Socratic method, we must be willing sometimes to forego the most efficient coverage of material for the benefits of the Socratic process.

The Socratic method has a bad rap, I know. Recently, a colleague from the Women Studies Program visited the law school to talk with some of our women students about the stresses associated with law studies. She asked them what they thought was the worst, or most stressful, part of law school, the part that they most wished would be different. Almost without exception they told her it was the Socratic method. As one who has had a long-term infatuation with the method, I was crushed by their response. The one aspect I thought redeemed the whole experience, and they single it out as the villain! It was as if they had said that the one thing they really could not stand about life in the eighties was Bruce Springsteen. Later I asked them if they could tell me what they thought the Socratic method consisted of, and these are some of the things they said: "intimidation"; "getting called on when you don't know the answer or just don't feel like talking"; "feeling manipulated, like you're just a puppet whose strings are being pulled until you say what the professor wants to hear"; "an excuse for professors to be unprepared with any thoughts of their own so they just ask questions and pick your answers apart." They also mentioned the experience of sitting through six weeks of class endlessly discussing the same twenty pages of material, only to find that they had to read two hundred pages entirely on their own in the seventh week. This is the experience that was known when I was in school as the "Leaping Leon" effect, after a professor, eponymously named, who was famous for covering three times as much material in the last week of the semester as he had covered in all of the preceding weeks. At bottom, I would explain these student responses as their unknowing observation that too often the method is being practiced, or malpracticed, in the absence of the essential prerequisites: trust, reciprocity, willingness to accept less coverage for more process.

Here is what I mean by trust: the student knows that the professor will not humiliate her or castigate her if her answer is wrong, or if she is flustered and can not remember the simple facts of a case. She knows that the professor will listen to her and consider what she says, rather than discarding it with a dismissive comment if it is not exactly the response the professor is looking for. This is what I mean by reciprocity: the professor considers that she might learn something from her students, in addition to vice-versa, and she acts accordingly. She is willing to answer as well as to ask questions. (One of my colleagues recently told me about a very funny conversation he had in his first-year Torts class. A student asked him a question and he said, as law professors are wont to do, "What do *you* think?" The student, unnaturally poised, said coolly, "I was asking *you*." My colleague said, "In that case, I'm unprepared." The class roared—they got the joke, which is of course on the false form of Socratic teaching that consists of all questions and no

answers.) Now I do not mean that it is never appropriate to turn a question around, or to respond with another question—that may be the best road to understanding, either the answer or the unanswerability of the question, or the way the answer can be discerned by reviewing things that have been said earlier. But a student is entitled to a response that is really responsive—not to a mystifying put-down. Here is something else I mean by reciprocity: the professor expects a lot from her students, but even more from herself. An excellent Socratic class requires more preparation, thought, and energy, even the seventh time you do it, than a lecture, even the first time you do it. The willingness to sacrifice coverage is self-explanatory, but difficult at times.

But perhaps you are wondering what exactly are the great benefits of the Socratic method that are supposed to compensate for the sacrifice of coverage and its other demands. I think I can best explain them with a metaphor I have used with my students, who sometimes get impatient and anxious because they do not have any comprehensible notes from weeks and weeks of class. (Copious notes are like money in the bank to law students, and they get really nervous when a professor does not, in their descriptive phrase, "give good note.") "Listen," I say to them, "before long you're going to be lawyers, and that's the big event. Imagine you're training for a marathon. Now if I were your coach, I could meet with you three hours a week and tell you all about the marathon, what it's going to be like, how long it is, all about its history, everything I can find about proper nutrition and training methods and all that stuff. We could spend our time together that way. But that would be silly. You can find out that stuff on your own once you know where to look. If I'm your coach, we're looking forward to the marathon, and we have a few hours a week together, what are we going to do? We're going to run, of course. We're going to run as hard and as fast as we can so you'll be ready for the big event. Any other use of our time would be a waste. This class is not about information; it's about exercise."

So the benefits of the process, for law students at least, and I would think for a student of any discipline that values critical thinking, is exercise. The Socratic method makes you think, and it does so in part by asking you to think about things you did not anticipate having to think about when you walked into the classroom. It requires you to think, and discourse, under pressure. And if you practice doing that, over and over, as a student, then when it really counts you can do it in front of a judge, or a jury, or a joint session of Congress. And although scientists and comparative literature scholars and geographers and linguists and environmental designers may never have to face down a judge or jury, surely there will be occasions, many occasions if they are lucky in their work, when they have to think critically under pressure. If they have been trained in part under the Socratic method, they will be prepared.

The building blocks of a Socratic class are, in the law school, original sources of law (most often judicial decisions) coupled with what lawyers call "hypotheticals." In other disciplines, they could be something else, of course:

a text, an experiment, notes from a field trip, a collection of data. But in law, the hypothetical question or situation is the central tool. Typically we expect our students to prepare for class by reading closely a relatively small number of decisions, perhaps coupled with statutes or other sources, as a foundation for understanding. The class begins with questions about the materials they have studied. Then, building on that base, the students are asked to consider various hypothetical or invented situations. Of course, sometimes you can make a hypothetical out of a real case that happened and was reported. (It is desirable, if you do this, not to tell the students that your hypo comes from a real case. If you are lucky a student will say, in response to your hypothetical, "That could never happen" and then you will have the inestimable pleasure of telling him that it really *did* happen, in fact it is reported at 373 Atlantic 2d page 950, in a 1972 decision of the New Jersey Supreme Court.) But most often, because you can invent a situation to make precisely the pedagogical point that you wish to make, you make one up. You invent a situation, and then you ask, what should happen? Is this case the same as or different from the one you read? What arguments would the defendant make? How would the prosecution respond? What would you do if you were the judge? Would anyone rule differently? Why? Hypotheticals are very handy, because, being invented, they can be changed, altered, or reinvented on the spot to serve the needs of the occasion. And the teacher's ability to think up, alter, or substitute hypotheticals is one of the central skills of Socratic teaching.

The following example is based on the United States Supreme Court's decision in the 1963 case of *Miranda v. Arizona*. The student will have been asked to read the *Miranda* decision in preparation for the class. (A brief excerpt of the decision is attached to this article as an appendix and should be studied by the reader.) As in a typical law school class, this dialogue begins with a real, reported decision and then alters some of the premises to see what happens:

PROFESSOR: What did the Court hold in *Miranda*?

STUDENT: That a confession made by a criminal suspect is inadmissible unless he was given certain warnings before he made it.

PROFESSOR: What warnings?

STUDENT: Um, you have the right to remain silent. Anything you say can be used against you. You have the right to an attorney. If you cannot afford an attorney, one will be appointed for you. Just like on TV. Cops carry around cards now with the warnings on them; they just read them off.

PROFESSOR: Good. Any confession?

STUDENT: Huh?

PROFESSOR: Must the warnings be given in order for *any* confession to be admissible?

STUDENT: Yeah, I think so.

PROFESSOR: Why did the Court require the warnings? Remember this was

a very controversial case, brought the United States Supreme Court into very bad odor in many parts of the country, still generates an extraordinary amount of controversy and even hatred in some circles more than twenty years later. So, why?

STUDENT: Well, because it seems it was common for cops to use very unfair and coercive methods to induce suspects to confess, like Mutt-and-Jeff, that sort of thing.

PROFESSOR: Well, suppose someone confessed and it was shown that the cops didn't use any of those techniques at all?

STUDENT: Well, even so I think the confession would be excluded unless the warnings had been given.

PROFESSOR: I can't see why if, as you say, the reason for the rule is to guard against such practices.

STUDENT: Well, I guess they wanted to prevent disputes about what actually occurred in the stationhouse by requiring the warnings to be given in every case.

PROFESSOR: Good. Now, suppose the warnings are given and then the tricky methods are used afterward.

STUDENT: Well, I guess then it would be just the suspect's bad luck. His confession could be used.

PROFESSOR: Does the rule really accomplish its objective then?

STUDENT: I guess the idea is that giving the warnings dispels the coercion somehow.

PROFESSOR: Well, I'd like to come back in a minute to whether you think the administration of these rote warnings—read, as you say, off of a card—really has the magical dispelling effect you describe. But first let me ask you something else. Or rather, let me ask Ms. Howard. Mr. Shawn has said that this rule requiring the administration of warnings applies to *any* interrogation. Do you agree?

STUDENT: Um, yeah, I think so.

PROFESSOR: Suppose the interrogation took place in the suspect's home rather than in the stationhouse?

STUDENT: I don't know. I—uh—I'm not sure.

PROFESSOR: Why do you hesitate? Is there something about that situation that strikes you as different for some reason?

STUDENT: Um, yeah, I guess it seems different that the suspect might not feel so intimidated, you know, so isolated, if he's in his own house.

PROFESSOR: So the warnings might not be required in that case?

STUDENT: Yeah, maybe not.

PROFESSOR: Is there any language in the case that suggests that the Court might think the two situations are different, too? Anyone remember any?

ANOTHER STUDENT: There's all this talk about privacy and secrecy and how it contributes to the atmosphere of coercion.

ANOTHER STUDENT: And some stuff about the importance of "insecurity about himself or his surroundings."
PROFESSOR: Good, but is there any language that suggests that the privacy or secrecy of the police station is *essential* to the Court's decision to require warnings as a precondition to the admissibility of a confession?
(Silence)
PROFESSOR: What *kind* of interrogation does the Court say it's describing?
STUDENT: Custodial?
PROFESSOR: Good. What does that mean?
STUDENT: Um, the suspect is in custody.
PROFESSOR: Yes, I think you're right. "Custodial," "in custody." Excellent. But, um, what does "in custody" mean? I mean, how do we know when someone is in custody?
STUDENT: He's under arrest.
PROFESSOR: He or she, yes. That's a good answer. But you know what my next question is going to be, don't you?
STUDENT: You mean how do we know when someone's under arrest?
PROFESSOR: Exactly. Maybe I could go get a cup of coffee and you all could continue, since we're to the point that you can anticipate all of my questions.
STUDENT: Yeah, and you never give us any answers.
PROFESSOR: Oh, come on, I do every so often. I'm sure I gave you one last month. Anyway, let's go back to Mr. James's very good question. How *do* we know when someone is under arrest?
STUDENT: Well, lots of times the officer will tell you so. You know, "You're under arrest."
PROFESSOR: Do you think it's possible for someone to be under arrest without having been told so by an officer?
STUDENT: Well, if you get dragged into the station or something I guess it's obvious.
PROFESSOR: I agree. There are various ways of telling someone he's under arrest, some of them very clear even if nonverbal. But suppose Mr. Miranda had been sitting at home watching "L.A. Law" and the officers had come to his house and asked politely to talk to him and he let them in and then once they were in they started to pull some tricks like the Mutt-and-Jeff act. And they hadn't given him any warnings. And he gave them a confession.
STUDENT: "L.A. Law" wasn't on in 1963.
PROFESSOR: Good point. "Maverick" then.

(etc.)

Of course, this is only one of the many dialogues that one might base on the *Miranda* decision. Others might explore such issues as why "You have a right to a lawyer" got included in the mandatory warnings (since the deci-

sion rested on the privilege against self-incrimination, not the right to counsel), whether the Court was interpreting the Constitution or "legislating" in this decision (and what exactly the difference is), or whether the Court's prohibition against the use of an unadvised suspect's confession would still apply if the defendant took the stand at his trial and told an entirely different story. The teacher in this dialogue would certainly want to return to the question of whether the decision really contributed to the goal of preventing persons from being tricked into giving confessions. The Court's later decisions addressing variations on the *Miranda* theme might be brought out. The Socratic technique would lend itself to following any of these trains of thought.

You may believe that the Socratic method is effective only in law schools—and indeed it does lend itself well to the analysis of legal materials, but I have seen, in the course of working with the Teaching Excellence Program, wonderful Socratic dialogues conducted by anthropologists, art historians, chemical engineers, and Spanish literary critics, among others. I have participated in Socratic dialogues based on a clinical diagnosis of mental illness, an article from *Newsweek*, an essay on naval history, excerpts from *Huckleberry Finn* and *The Canterbury Tales*, the first law of thermodynamics, and a Frank Lloyd Wright blueprint. The Socratic method may not lend itself to every piece of material, but it is surprisingly versatile. It promotes careful reading of texts, analytical thinking, and self-teaching. Mastering those skills is a very large part, I believe, of what it means to be an educated person.

Appendix

MIRANDA v. ARIZONA
384 U.S. 436, 448 (1966)

Excerpt from the Miranda case.

Warren, C.J. . . . Interrogation still takes place in privacy. Privacy results in secrecy and this in turn results in a gap in our knowledge as to what in fact goes on in the interrogation rooms. A valuable source of information about present police practices, however, may be found in various police manuals and texts which document procedures employed with success in the past, and which recommend various other effective tactics. These texts are used by law enforcement agencies themselves as guides. It should be noted that these texts professedly present the most enlightened and effective means presently used to obtain statements through custodial interrogation. By considering these texts and other data, it is possible to describe procedures observed and noted around the country.

The officers are told by the manuals that the "principal psychological factor contributing to a successful interrogation is *privacy*—being alone with the person under interrogation." The efficacy of this tactic has been explained as follows:

> If at all practicable, the interrogation should take place in the investigator's office or at least in a room of his own choice. The subject should be deprived of every psychological advantage. In his own home he may be confident, indignant, or recalcitrant. He is more keenly aware of his rights and more reluctant

> to tell of his indiscretions or criminal behavior within the walls of his home. Moreover his family and other friends are nearby, their presence lending moral support. In his own office, the investigator possesses all the advantages. The atmosphere suggests the invincibility of the forces of the law.

To highlight the isolation and unfamiliar surroundings, the manuals instruct the police to display an air of confidence in the suspect's guilt and from outward appearance to maintain only an interest in confirming certain details. The guilt of the subject is to be posited as a fact. The interrogator should direct his comments toward the reasons why the subject committed the act, rather than court failure by asking the subject whether he did it. Like other men, perhaps the subject has had a bad family life, had an unhappy childhood, had too much to drink, had an unrequited desire for women. The officers are instructed to minimize the moral seriousness of the offense, to cast blame on the victim or on society. These tactics are designed to put the subject in a psychological state where his story is but an elaboration of what the police purport to know already—that he is guilty. Explanations to the contrary are dismissed and discouraged. . . .

The manuals suggest that the suspect be offered legal excuses for his actions in order to obtain an initial admission of guilt. Where there is a suspected revenge killing, for example, the interrogator may say:

> Joe, you probably didn't go out looking for this fellow with the purpose of shooting him. My guess is, however, that you expected something from him and that's why you carried a gun—for your own protection. You knew him for what he was, no good. Then when you met him he probably started using foul, abusive language and he gave some indication that he was about to pull a gun on you, and that's when you had to act to save your own life. That's about it, isn't it, Joe?

Having then obtained the admission of shooting, the interrogator is advised to refer to circumstantial evidence which negates the self-defense explanation. This should enable him to secure the entire story. One text notes that "Even if he fails to do so, the inconsistency between the subject's original denial of the shooting and his present admission of at least doing the shooting will serve to deprive him of a self-defense 'out' at the time of trial."

When the techniques described above prove unavailing, the texts recommend they be alternated with a show of some hostility. One ploy often used has been termed the "friendly-unfriendly" or the "Mutt and Jeff" act:

> . . . In this technique, two agents are employed. Mutt, the relentless investigator, who knows the subject is guilty and is not going to waste any time. He's sent a dozen men away for this crime and he's going to send the subject away for the full term. Jeff, on the other hand, is obviously a kindhearted man. He has a family himself. He has a brother who was involved in a little scrape like this. He disapproves of Mutt and his tactics and will arrange to get him off the case if the subject will cooperate. He can't hold Mutt off for very long. The subject would be wise to make a quick decision. The technique is applied by having both investigators present while Mutt acts out his role. Jeff may stand by quietly and demur at some of Mutt's tactics. When Jeff makes his plea for cooperation, Mutt is not present in the room.

The manuals also contain instructions for police on how to handle the individual who refuses to discuss the matter entirely, or who asks for an attorney or relatives. The examiner is to concede him the right to remain silent. "This usually has a very undermining effect. First of all, he is disappointed in his expectation of an unfavorable

reaction on the part of the interrogator. Secondly, a concession of this right to remain silent impresses the subject with the apparent fairness of his interrogator." After this psychological conditioning, however, the officer is told to point out the incriminating significance of the suspect's refusal to talk:

> Joe, you have a right to remain silent. That's your privilege and I'm the last person in the world who'll try to take it away from you. If that's the way you want to leave this, O.K. But let me ask you this. Suppose you were in my shoes and I were in yours and you called me in to ask me about this and I told you, "I don't want to answer any of your questions." You'd think I had something to hide, and you'd probably be right in thinking that. That's exactly what I'll have to think about you, and so will everybody else. So let's sit here and talk this whole thing over.

Few will persist in their initial refusal to talk, it is said, if this monologue is employed correctly. . . .

From these representative samples of interrogation techniques, the setting prescribed by the manuals and observed in practice becomes clear. In essence, it is this: To be alone with the subject is essential to prevent distraction and to deprive him of any outside support. The aura of confidence in his guilt undermines his will to resist. He merely confirms the preconceived story the police seek to have him describe. Patience and persistence, at times relentless questioning, are employed. To obtain a confession, the interrogator must "patiently maneuver himself or his quarry into a position from which the desired objective may be attained." When normal procedures fail to produce the needed results, the police may resort to deceptive stratagems such as giving false legal advice. It is important to keep the subject off balance, for example, by trading on his insecurity about himself or his surroundings. The police then persuade, trick, or cajole him out of exercising his constitutional rights.

Gendered Subjects[1]

Joyce McCarl Nielsen

When the first women studies programs in this country were established in 1970, it was one year after Richard Nixon first assumed the presidency and a year after Apollo 11 landed on the moon. It was the year that then-Vice President Spiro Agnew referred to Vietnam protest leaders as "an effete corps of impudent snobs." Nineteen-seventy was also the year the U.S. invaded Cambodia and four students were killed at Kent State University by National Guard troops. The Kansas City Chiefs defeated the Minnesota Vikings 23 to 7 to win Super Bowl IV; Angela Davis was arrested in New York City; *Midnight Cowboy* won the Academy Award for best film of the year; and Paul Zindel's drama *The Effect of Gamma Rays on Man-in-the-Moon Marigolds* opened in New York City. Ken Rosewall and Margaret Court were still winning singles tennis championships; the court martial of Lt. William Calley for the My Lai massacre began at Fort Benning, Georgia. Nobel-Prize winning scientist Linus Pauling made his claim about high doses of vitamin C warding off the common cold and the first New York City Marathon was held. Nixon had not yet made his famous trip to China, the Pentagon Papers were not yet the publishing story of the year. The fashion scene was highlighted by jazzed up short-shorts called "hot pants."

In the short twenty years since those pre-Watergate, pre-Iran hostage days of anti-war demonstrations and student unrest, women studies scholars have been engaged in a "deconstructive project" (Harding and Hintikka 1983)—that is, they've been discovering how distinctively masculine perspectives on masculine experiences have shaped the substance and development of academic disciplines. Women's history, for example, has made traditional periodization problematic: maybe the Renaissance wasn't a renaissance after all since it was a period when women as a group experienced a decline in status and freedom of movement (Kelly-Gadol 1976). We realized that sociologists had little to say about how women gained and used power because their social status had been measured solely in terms of their relationships to men. And, by dichotomizing human activities into categories called "work" and "leisure," sociologists had made housework invisible, since it is neither paid (and therefore is not work) nor fun (therefore not leisure). We realized also

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that psychologists had adopted from traditional psychoanalytic thought what we now know are erroneous assumptions about women's and men's so-called basic "natures"; and even further that psychologists had been making universal generalizations about personality and behavior on the basis of studies of male undergraduates and even male rats.[2] Further, we realized that women were being portrayed in both popular and classical literature as either sexually pure (virgins, fair maidens) or sexually polluted (seductive temptresses), but rarely as real, complex, and whole characters. It also became apparent that the work of many women artists and writers who were influential in their own time had been glossed over by historians and critics in literature, music, and the fine arts.

In the short 20 years since 1970, we have also been engaged in a reconstructive process—that is, using women's experience as a foundation for what we think is more adequate and truly human substantive knowledge. We now have "woman-the-gatherer" alternatives to "man-the-hunter" stories that were proposed by androcentric primatologists (Tanner and Zihlman 1976). We now have an account of women's moral development that, though it may not be the final work on the subject, at least does not present women as ethically and morally immature (Gilligan 1982). And, having turned Freudian theory on its head, psychoanalytic feminists have suggested that some of the so-called personality differences between women and men may be the more or less direct result of a division of labor by sex in which women do most of the early parenting (Chodorow 1978; Dinnerstein 1976). Feminist literary criticism and reconstruction has been equally prolific. Consider, for example, traditional versus feminist interpretations of the familiar classic, Orwell's *1984*. An accepted view is that it portrays a conflict between Winston Smith (who is described as "the last man") and O'Brien, who represents the totalitarian state's pursuit of power for power's sake. An alternative interpretation, one informed by consideration of women and what they represent in the novel (Patai 1982), shows the extent to which Winston Smith and O'Brien are alike—i.e., share the same basic "masculine" values—and how together they can be contrasted with the women in the text. As a result of this reanalysis, we have a much broader, enlarged view of the novel and can be somewhat more optimistic about an otherwise despairing ending. (See Nielsen, [1984] for another feminist discussion of *1984*.)

This process of reconstruction, in turn, has made us aware of the limits of supplementation. It has made us realize the extent to which the most fundamental and formal aspects of our thinking are gendered[3] and has led us to question intellectual methods themselves and to explore new ways of knowing (Harding and Hintikka [1983]). Consider, for example, Alison Jagger's (1983) observation about mind-body dualism in the Western philosophical tradition and the excessive value placed on the mind at the expense of the body in Western culture. Jagger first acknowledges the connection between systems of ideas and the life circumstances of those who produce them, and then

says that given the traditional sexual division of labor, it is easy to see how men—at least men of a certain class—would be likely to place supreme value on mental activity and to ignore the fact that such activity would be impossible without the daily physical labor (often done by women) that is necessary for survival. She goes on to say that it is even harder to imagine women developing a political theory that presupposed political solipsism, one that ignored human interdependence and especially the long dependence of human young. Nor would women, given the traditional division of labor by sex, be likely to formulate a conception of rationality that stressed individual autonomy (Jagger 1983 p. 46).

Gender also influences what is considered problematic in a discipline. Consider, for example, the excessive interest in and effort on the part of biologists and psychologists to establish biologically and psychobiologically based sex differences in human populations. They seem to go out of their way to study the two sexes across different species in order to show how female humans are like female animals (and male humans like male animals, especially the big ferocious ones). They do *this* rather than focusing, say, on those attributes that women and men as humans have in common and that distinguish them from other animals—e.g., that humans are reflective and have consciousness, self-concepts and a sense of humor. Such commonalities tend to be ignored in sex-specific cross-species comparisons.

All these examples—whether deconstructive, reconstructive or epistemological in nature—illustrate two things. The first is that we are witnessing an intellectual revolution, and the second is that the revolution is not yet over. It is the latter notion that I would like to discuss, but the former is, of course, the rationale for gender integration projects. That is, though one can argue for the inclusion of women on political and moral grounds, an equally powerful argument is the intellectual one. Indeed, it would be foolish not to pay attention to new developments like those I've mentioned; it would be like continuing to adopt the earth-as-flat thesis when there is evidence for the round-earth alternative. Even explaining why extensive work on women in one's field is lacking—if that is the case—can be productive and illuminating.

That this intellectual revolution is not yet over makes women's scholarship and gender studies an exciting but exhausting area to be in. I say exhausting because, once considered, the relevance of gender to an ever expanding arena of subjects becomes apparent. Indeed, what started out as a truly modest effort to include women—to compensate for the absence of women—has become like the ever-widening circle of reverberations from a stone thrown in a pool of water. The potentially relevant issues and areas of study seem endless. One wonders where it will all end. Jo Freeman (1975:98) points out that there is an inherent logic to feminism such that once adopted, it is easy and natural to extend it to a widening circle of issues, and it is easy to conclude that all society must be changed. For women to be fully liberated, a considerable amount of social structural rearranging is necessary. And, of course, that is

what gender integration projects, as well as utopian visions and revolutions, are about. I'll return to the theme of revolution and utopian visions later. For now, consider that the answer to the question asked by Heilbrun (1979:86): "Is there a women's angle to everything?" is "Yes, there is."

In this paper, I would like to make some semi-outrageous claims that pertain to the process of an ever-expanding or widening number of areas that call for reassessment in terms of gender. And if these claims don't seem so outrageous to you, that's good. If they do, I hope they will not seem so by the time I am finished.

My first claim is that integrating women studies scholarship into the curriculum is inherently subversive. To illustrate, consider a simple demographic fact that traditional and "ethnic" historians disagree about: the size and nature of the indigenous population on the American continent at the time that the first western Europeans arrived. The traditional view is that the number of people already here was small, around 3 million, and that theirs was not a very advanced civilization. Given this picture, the process of westward expansion by Europeans and their descendents is interpreted as a more advanced group settling and developing a wide-open frontier and at the same time civilizing otherwise primitive, less-developed peoples. Native American scholars, however, show that the population of the Western Hemisphere was actually closer to 10 million and stress the fact that indigenous peoples had developed agriculture and fairly advanced, complex social structures. (This was especially true in South America.) This alternative view means that European expansion displaced existent cultures and that the process is better described as one of conquest than settlement.

This example is not a gendered one, but it shows the transformative power that consideration of a non-traditional view can have and leads into an example of how the process of balancing the curriculum is an ever-expanding one. For just as Native American historians are challenging Anglo-based American history, minority women scholars are challenging aspects of what they call white women's studies scholarship. Indeed, minority women argue that white women have done to them exactly what male scholars have done to both white and nonwhite women—that is, they have excluded, misrepresented, ignored, and devalued them. And, like white men, white women seem to have generalized from and made universal statements on the basis of their own very limited view, which they wrongly assume holds for all women.

Consider, for example, the difference between white and black women writers' treatment of rape. Angela Davis (1981) has argued that the work of some white feminists has helped perpetuate the myth of the wild-eyed black male rapist. Susan Brownmiller's discussion of "interracial rape," in her classic book *Against Our Will*, as a case in point, emphasizes the rape of white women by black men, but treats the subject of rape of black women by white men primarily as an historic issue, focusing on the rape of black slave women. In fact, black women continue to be victims of racist sexual violence by white

men; it is not just history and though rape convictions in general are lower than they should be, once arrested, black men are more likely than white men to be convicted and sentenced for rape. Black women are concerned about innocent black men being found guilty of rape, because, of course, historically lynching was used as a weapon against them. Black women resent both what they call the myth of the black rapist and silence about the sexual violence that black women experience. As a result, black women are wary of white feminist campaigns against rape (Andolsen 1986).

Middle-class white and working-class black women also have significantly different experiences of paid work. White women see the opportunity to work as liberating; black women see the obligation to work as limiting their ability to care for their children and families. The experiences of these two groups dramatically intersect in the roles of black domestic worker, on the one hand, and white employer, on the other. As one black female writer (Andolsen 1986:92) put it, there is a "complex relationship between the economically privileged white women trapped in a gilded cage and the poor black women employed to polish that cage."

It is no wonder then that considerable anger and rage against white women is expressed in black women's literature. Here is a particularly poignant example by poet Lorraine Bethel, who writes:

> I bought a sweater at a yard sale from a white-skinned (as opposed to Anglo-Saxon) woman. When wearing it I am struck by the smell—it reeks of a soft, privileged life without stress, sweat, or struggle. When wearing it I often think to myself, this sweater smells of a comfort, a way of being in the world I have never known in my life, and never will. It's the same feeling I experienced walking through Bonwit Teller's and seeing white-skinned women buying trinkets that cost enough to support the elderly Black Woman elevator operator, who stands on her feet all day taking them up and down, for the rest of her life. It is moments/infinities of conscious pain like these that make me want to cry/kill/roll my eyes suck my teeth hand on my hip scream at so-called radical white lesbians/feminist(s) "WHAT CHOU MEAN WE, WHITE GIRL?" (cited in Hooks 1981:152).

The point here is that once you begin to integrate into the curriculum voices and perspectives of one group not hitherto included, you more easily see how the case can be made for including the perspectives of all those groups not yet fully represented, and the subversive nature of integration projects becomes more evident as each new view challenges and sometimes radically changes what is now received knowledge.

Before I make my second semi-outrageous claim, let me take a minute to define more specifically the process of integrating women's scholarship; I think such clarification will underscore its potentially subversive nature. Here is the best, most complete definition I've come across.

> Including women refers to the complex process of redefining knowledge by making women's experiences a primary subject for knowledge, conceptualizing women as active agents in the creation of knowledge, including women's perspectives on knowledge, looking at gender as fundamental to the articulation of knowledge in Western thought, and seeing women's and men's experiences in relation to the sex/gender system. . . . (It is a) multidimensional reconstruction of knowledge (Andersen 1987:224-225).

Curriculum-change projects designed to bring the scholarship on women into the whole curriculum are labeled variously "mainstreaming," "integrating women's studies into the curriculum," and "gender-balancing the curriculum." But women studies scholars have problems with each of these labels. The term "mainstreaming," for example, implies that women have been out of, and are only now entering, the mainstream and that there is only one mainstream and that, by entering it, women will be indistinguishable from men. It makes the reconstructive work seem like a quick and simple process—whereas, in fact, there are diverse and plural streams in both women's and men's experiences, and they may not mix so well.

The terms "integration" and "balance" are also problematic. Integration implies that women's scholarship can be easily assimilated, but reconstructive scholarship has shown that it cannot be simply added. Ideally, integration does not mean incorporating traditionally excluded groups into a dominant system of thinking. Rather, the goal is a change in the way one thinks.

The term "balancing" has its problems because it implies that all perspectives are equally accurate or significant. But certainly our goal is not to make room in the curriculum for all perspectives, thereby including racist, anti-Semitic, ethnocentric, class-biased, and sexist views. No, the feminist goal is to replace sexist knowledge rather than accommodate it. Being explicit about this goal raises some problems, especially for liberals. Because if we are not advocating pluralism, which includes the good and bad guys, then on what grounds do we decide whose views should be presented or included? Liberal calls for balance have an underlying appeal for detached and dispassionate analysis, but this itself can be considered another, possibly partial and/or distorted viewpoint, even though it is one that reflects the values and structure of the dominant culture (Andersen 1987). These are tough questions for which feminists have no ready-made answers and they will resurface in this essay.[4] For now, consider the goal of replacing sexist knowledge as the promotion of feminist scholarship in its most inclusive rather than exclusive sense.

My second semi-outrageous claim is that all knowledge is gendered. You probably noticed that the examples I have used have come from the humanities and social sciences. What about math and the physical sciences? Surely I am not going to claim that they too are gendered, or that they are race- and/or class-specific? Well, yes, I am—at least indirectly. First, it is an easily documented claim to make about the biological and medical sciences, especially from a historical perspective. There is an extensive male-based scien-

tific explanation for everything from conception (e.g., Leeuwenhoek's "homonculi") to achievement in architecture, engineering and art (male hormones and superior right brain performance). A major theme in this literature is that such research has been used to inform and maintain social policies designed to limit or curtail the activity of women, as well as some race and ethnic groups (Fausto-Sterling 1985; Keller 1985, 1982; Nielsen 1990a; Sayers 1982; Shields 1975; Stannard 1970).

With respect to the subject matters of physics and math, Sandra Harding (1986) argues that feminists do not have to prove that these topics are gendered in order to make a separate claim (and this will be my third): that the scientific method as a way of knowing is gendered. Before developing the latter notion, we can say about math and physics that their socially constructed nature is being demonstrated (see Bloor [1977] on math; Capra [1982] and Harding [1986] on physics), though their gendered dimensions are just beginning to be specified (Keller 1985).

What do I mean when I say that the scientific method as a way of knowing is gendered? Consider first an androcentric account of the origin of human society—that is, a description of the evolutionary transition from the social life of nonhuman primates to prehominid and then to humans. Washburn's man-the-hunter theory, for example, argues that aggression for males was adaptive because it led to more offspring (more aggressive males would successfully reproduce more than nonaggressive ones); and that selection pressure existent in the transition from a forest to a savanna setting favored increased tool use, which in turn facilitated a hunting way of life, the evolution of a larger brain and language. Further, the consequences of hunting as an adaptation included increased curiosity, mobility, pleasure in hunting and killing, and the importance of the male (hunting) group because of its interdependence and cooperation. Notice that in this theory, males as hunters are seen as responsible for most of our uniquely human traits and social life. One begins to wonder, as Ruth Hubbard (1979) does, that females evolved at all!

Now compare a feminist alternative. Tanner and Zihlman's (1976) account of human evolution includes females as active agents in the evolutionary process. Their major hypothesis is that the development of gathering (of both plants and animals) was the major dietary specialization of savanna living and that this is related to tool use and bipedalism, all of which interrelate with two important female activities: maternal socialization and female choice in sexual selection. They argue that it is likely that female gatherers developed digging sticks, food containers and, importantly, baby-carrying devices. Gathering or foraging activity itself requires knowledge about what is and what is not edible, where the best foods are found, and details of the local ecology—all requirements that would have constituted selection pressure for the development of symbolic communication.

Survival in the savanna setting, then, would have depended on cunning not fighting, on cognitive processing not aggression. And because human babies

are hard to raise (they need care and protection, and the socialization process is, of course, much longer than it is for other primates), females would choose friendly, nonthreatening males as mates, and there would have been selection for bisexual cooperation regarding child-raising. (Notice Tanner and Zihlman's stress on female sexual choice versus the androcentric theory's depiction of females as the passive means of reproduction.)

It is important to realize that both feminist and androcentric accounts operate within the context of scientifically sound modern physiology, genetics and social theory—they are all "scientific." It is also the case that the feminist account is more consistent with the most recent evidence we have about early human social life. This evidence comes from several sources, including studies of contemporary foraging societies (e.g., the !Kung in the Kalahari Desert) and of the social interaction of chimpanzees. The use of chimps (rather than baboons) as models is argued on the grounds that they are physiologically and genetically more like the stem population that preceded apes and hominids. The facts that female chimps use tools more often than male chimps, that chimp social structure is flexible rather than rigid and hierarchical, that social continuity flows through females, and that female chimps choose their sexual partners all constitute evidence to support Zihlman and Tanner's reconstruction. In short, the feminist account reveals the androcentric bias of the earlier argument and is itself a more inclusive, less restrictive understanding of the earliest human foraging societies.

Sandra Harding (1986) uses a similar contrast between androcentric and feminist accounts to pose a paradox that challenges our traditional understanding of scientific method. She asks, how can work that is frankly political—the feminist researchers in this case were reacting to previous work that devalued women and were looking specifically for women's contributions—be more plausible, more acceptable, and more supported by the evidence than the so-called "objective" work of earlier researchers, which now looks blatantly androcentric in comparison? Though the feminist work was well in the context of traditional scientific methods, it was purposely political. (As Haraway [1978:57-58] describes, Zihlman and Tanner appropriated sociobiology for feminist purposes.) The question is how can blatantly political research better fit the "facts" and now seem so acceptable?

One could argue, as some (Longino and Doell 1983) do, that the previously androcentric account was just not "good" science, that increased objectivity on the part of researchers would have resulted eventually in a fairer, more equitable treatment of women. But, as Harding points out, such an argument suggests that objectivity in science depends on the researcher as much as on the method. This contradicts the depiction of science as a more or less foolproof, sure procedure that relies on observation to test theories and hypotheses about the world. The procedure itself is purported to guarantee that such testing can be done by any competent person (Theodorson and Theodorson 1969). If objectivity depends on the researcher, how can we guar-

antee "objectivity?" If androcentric results are just "bad" science to be replaced eventually by "good" or "better" science, why is it that androcentric theories like the man-the-hunter story last as long as they do (why did no one notice evidence against it earlier?), and why is it that they are now being corrected not by androcentric scientists themselves, but by feminists with conscious intent to "correct" the story? The question is, can a feminist consciousness produce better science than androcentric scientists?

There is a growing literature on gender and science as a way of knowing (Bleier 1984, 1986; J. Harding 1986; S. Harding 1986; S. Harding and O'Barr 1987; Keller 1985; Nielsen 1990b). For now, consider the above example as one of many that strengthens the claim that traditional scientific methods are gendered, as well as support for the theme that gender-balancing, or whatever one calls it, is indeed an ever-expanding process. What started out as an innocent (perhaps naive) effort just to include women, just to make up for women's exclusion, as a corrective or compensatory effort, has not only been extended to other equally excluded groups, but has contributed to a careful scrutiny (and sometimes devastating analysis) of the process of knowledge construction itself. For, as you know, the scientific method has been, until at least recently, a most revered way of knowing.

If scientific method as a way of knowing is gendered (and probably also class- and race-specific), then surely ways of knowing in general also have gendered, as well as class and race, dimensions. Thus, my fourth semi-outrageous claim is that ways of knowing in general and, therefore, the processes of teaching and learning are gendered or have gendered dimensions.

Consider, for example, Harvard educator William Perry's (1985) scheme of college students' epistemological development (Table 1). Perry argues that in the course of their college years students move through a series of perspectives about the knowledge-gaining process. He traces a progression that begins with what he calls basic dualism in which the student views the world in polarities of right/wrong, black/white, we/they, and good/bad. Knowledge for dualists is "right" answers and teachers are seen as authorities who "give" students the truth. These are the students who say things like, "What's this rigamarole about three theories of the economic cycle, anyway? Why doesn't she give us the right one and forget the bullshit?" (p. 5).

As students gradually become aware of the diversity of opinion and multiple perspectives that others hold, their dualistic faith in absolute authority and truth is shaken. Dualism then becomes multiplicity (Table 1). The student begins to understand that authorities may not have the right answers, especially in areas that are new or that seem to be as much opinion and taste as fact. The student begins to grow beyond a dependency and trust in external authorities and develops a new sense of freedom. This is the stage where students say things like "Everyone has a right to his own opinions" and "My opinion is right because I have it."

As students are challenged by teachers' and others' demands that they relate their opinions to supporting data, multiplicity fades and what Perry calls "relativism subordinate" develops. At this stage, students realize that the "way" or "how" of knowledge is as important as the "what." They begin to see that the context and assumptions of their arguments are important and, in time, that knowledge is relative. Authorities are now seen as potential colleagues with whom one shares interpretations of reality.

There is finally a shift into "full relativism" where the student completely comprehends that truth is relative, constructed, contextual, and mutable. It is within this stage of relativism that Perry sees commitments to career, companions, and values evolving.

You may have noticed from the above description that these transitions are facilitated and promoted by being exposed to diversity and multiple perspectives (three theories of economic cycles versus one) and by incongruencies and exposure to information that does not fit one's fundamental assumptions. These force a kind of intellectual accommodation that leads to new ways of knowing and thinking. Perry (1985) notes, for example, that sometimes through sheer accident of internal diversity large, pluralistic universities and colleges inadvertently set the stage for student growth.

Like others, I welcomed Perry's scheme because it helped explain why I had been so successful with some students (advanced cognitively, of course) and a failure with others (dualists, of course). I also wondered if women studies courses, to the extent that they contribute an additional, new, and very different view, would be particularly effective at promoting transitions in the kind of cognitive development we are talking about here. This is the working hypothesis of a research project I am currently supervising. Results so far, look promising.

In any case, as with so many other influential works, we now have an alternative feminist or woman-centered version of adult epistemological development. Belenky, Clinchy, Goldberger and Tarule (1986) build on Perry's scheme, but describe their findings as *Women's Ways of Knowing* (Table 1). The right-hand column in Table 1 summarizes their results from interviews with women subjects. In this project, Belenky and colleagues (1986) sampled in a way that would exaggerate differences among women—that is, they tried to include women of all ages and women in different kinds of educational situations, ranging from community colleges to elite eastern schools. (The difference between Perry's and Belenky et al.'s sampling procedures is perhaps characteristic of the difference between traditional and feminist research. Perry generalized from a very select, prestigious group of Harvard men. Notice that his title is "students," rather than "men's" thinking, as it could have been since his original presentation was based on male data. I should add, however, that he and his colleagues subsequently have reported that women students' descriptions fit the same model.)

To summarize Belenky et al.'s version of women's epistemological transitions, I will focus only on how the women-based account is different from the men's. First note that they include an initial stage called "silence," which is characterized by a feeling of being "deaf and dumb" and having no internal voice at all. This was more characteristic of women from home settings characterized by verbal abuse and/or from settings in which the norm or stance of the male authority figure was that women are to be seen and not heard. Though very few women in Belenky et al.'s sample were in this stage at the time of the interview, many described it retrospectively as characteristic of an earlier stage of themselves. In Perry's scheme there is no equivalent to this stage of silence.

What Belenky et al. call "received knowledge" is like Perry's dualism. This stage is characterized by listening to the voices of others. But one difference is that Perry's dualistic men dichotomized between "authority-right-we" and "illegitimate-wrong-others," whereas identification with "authority" was quite alien to many women in the Belenky et al. sample. They were more likely to say "authority-right-they" rather than "we." (Of course, this may be a function of social class, as well as gender.) Another difference is that the majority of women in the "subjectivist" stage came to it from a crisis experience that involved failed (male) authority and failed trust in male figures. It was after such an experience that these women often returned to school. Thus, education followed rather than promoted or preceded the subjectivist position. (This is an important difference.) Even so, formal schooling was sometimes a problem for these women because teachers as experts challenged and threatened their newly discovered own inner voices.

And even for middle-class women, whose shift out of dualism seemed to come from exposure to multiple perspectives as it did for Perry's men, the subjectivist/multiplist stage was not the same. Their approach was more cautious. They seemed to be less comfortable with separating themselves from authoritative others, and thus adopted a kind of "good girl" approach. The difference here is that men say, "I have a right to my opinion," while women say more modestly, "It is just my opinion." The womens' interviews at this stage also contained a strong antirationalist theme, many of them rejecting science and changing their majors. They saw science and rationalism as unfeminine, inhumane, and detrimental to emotional life.

For both position #4, "procedural knowledge," and #5, "constructed knowledge," Belenky et al. distinguish between what they call separated and connected forms of knowledge. These terms are borrowed from and based on Gilligan's (1982) and feminist psychoanalytical arguments that because of social structural arrangements and developmental processes women have connected or relational senses of selves, while men's self-concepts are based on separation and autonomy.

Separated knowing is considered more characteristic of men and well-educated white women attending elite schools. They are able to play what

Peter Elbow (1986) calls "The Doubting Game," which is essentially a way of critical thinking perhaps best summed up by the following statement by a college sophomore:

> I never take anything someone says for granted. I just tend to see the contrary. I like playing devil's advocate, arguing the opposite of what somebody's saying, thinking of exceptions to what the person has said, or thinking of a different train of logic (Belenky et al. 1986, p. 100).

Connected knowing is more like what Elbow calls "The Believing Game," nicely summarized by this statement, also by a college sophomore:

> When I have an idea about something, and it differs from the way another person is thinking about it, I'll usually try to look at it from that person's point of view, see how they could say that, why they think that they're right, why it makes sense (Belenky et al. 1986, p. 100).

Elbow (perhaps generalizing from his own male experience) says that the believing game is more difficult to play. Belenky et al. say that women find it easier to believe than doubt and say that, unlike men, women students do not see this as a game. They take the attacks and criticisms (in the doubting game) more personally, whereas men do not. Separated knowing is essentially adversarial. And when the setting is such that separated knowing is the only voice allowed, women often lose their voices altogether and say nothing. Of course, both Elbow and Belenky et al. consider an integration of both types of knowing as ideal. The point here, however, is that separated knowers are more comfortable in contemporary institutions of higher education.

Certainly if there are gender and social class differences in students' cognitive development, the implications for teaching are significant. Maybe we should take seriously Elbow's suggestion that our students would be more creative if we balanced our current emphasis on the "doubting game" with more attention to the "believing game."

It is interesting that *Women's Ways of Knowing* adopted from their subjects a "voice" and "silence" metaphor for "mind" and "thinking" (to lose one's voice or be silent is to not have knowledge). This is contrasted with the visual metaphor for mind that reflects more traditional thinking, where "to know" is "to see," to illuminate, to be clear about something. The knowledge metaphor in Western philosophy has been that of vision—we say we gain insight, see the light, talk about throwing light on the subject, or "see that now." In short, to know is to see. One important implication of the knowing-equals-seeing theme is the suggestion that knowing can be objective, like a camera. The ear, on the other hand, which listens to and picks up the nuances and subtleties of others, seems more interactional (Keller and Grontokowski 1983).

The gender differences described here are consistent with other, not so obvious ways in which students are gendered. Consider, for example, the way

in which undergraduate student majors are gendered (Table 2). The degree of sex segregation in majors is not as pronounced as that of occupations in the work force. Nevertheless, sex segregation in majors increases with age—that is, seniors fit the traditional pattern more than do first-year students.[5] Consider also the article, "The Classroom: A Chilly Climate for Women?" (Hall and Sandler 1982), which discusses some fairly subtle interactional distinctions between male and female students. Or consider the woman student's probable reaction to everyday encounters with examples of popular culture. A cartoon about the dangers of "Broncomania," for instance, shows a man willing to sell his wife for a Super Bowl ticket. Even if she is without feminist consciousness, in order to enjoy or "get" the point of the cartoon, she must, temporarily at least, identify with men (who have wives). In other words, at some level of awareness, she sees that the cartoon is written not just by a man, but from a man's point of view, and for men. Essentially, she has to deny her own identity as a female, even if temporarily, in order to appreciate that part of the joke. If this is the case for a brief bit of humor, imagine the kind of shift necessary to participate in a literature or sociology course in which all the reading is androcentric.

Before I go on to a last example of expanding the concept of gender-balancing, I thought you might find it interesting to know that the cognitive growth models outlined in Table 1 are strikingly similar to descriptions of what is called a feminist conversion process, and strikingly similar to the stages described in some theories about what happens to faculty when they participate in women studies integration projects. This does not mean that project directors and coordinators of integration projects try to convert faculty participants or even that feminist conversion is the goal, but there are parallels between the cognitive stages described by Perry and Belenky *et al* and what is called "feminist phase theory" (Table 3). Notice, for example, that there is a period of ignorance about women paralleling the silent stage, there is a dualistic phase, a multiplistic phase, a relativistic phase, and a relativistic with commitment phase—all identified as part of the process of including women's scholarship. I am not sure what to make of these parallels. I do not think they mean that integration or transformation projects facilitate faculty's cognitive development because presumably we are all already at the higher end of the scale! And I am always suspicious of developmental schemes that equate characteristics of the author with the most advanced stage. (Surely Perry himself and his colleagues are at the full relativism-with-personal-identification-and-commitment stage.) But I can report that we used Tetrault's stages in the evaluation part of our own integration project and discovered some interesting patterns. First, faculty often describe themselves at stage 5, when according to the researcher's evaluation they are at stage 3. Second, it is particularly difficult for most faculty to identify with stage 4. This is because it requires a kind of commitment to the study of women *per se*, not women in comparison to men, or women according to traditional criteria of

excellence, but just women in all their diversity. This is important because our research results suggest that stage 4 (attention to women) is a prerequisite to some aspects of stage 3 rather than after it, as Tetrault has it. In other words, it may be that you cannot get to either stage 3 or 5 without going through 4 (Nielsen and Abromeit 1989).

Well, now that we have transformed all the disciplines and discussed potential revolutions in the processes of knowing, teaching, and learning, we can extend the feminist transformation process to the world at large. I started this paper with a look back in time. I would like to complete it with a look forward into the future with some themes from futuristic, especially utopian, literature.

For feminists, utopia is a place where egalitarian, consensual, and cooperative relationships flourish and where both sexes are able to engage in meaningful work. Societal reconstructions are based on the notion that the key to a satisfying life is opportunity for intimate relationships *and* meaningful work and that these two activities are compatible. Thus, in feminist utopias the social structure is such that women and men do not have to choose between work and relationships. Further, men either literally become mothers, as in Le Guin's *Left Hand of Darkness*, or men become nurturing, as in Percy's *Woman on the Edge of Time*. In feminist utopias feminist values are extended to the whole community. As Baruch (1979:44) put it, "instead of the family being subsumed under the state, the state becomes family."

Much contemporary futuristic literature (e.g., Fritjof Capra's *The Turning Point*), recognizes that humanity's survival depends on promoting the kinds of values found in feminist utopian literature. Curtailment of both individual and societal aggression, for example, is necessary now more than ever for the survival of the collective whole. Life on earth is literally at stake. The promising theme in futuristic literature and the feminist contribution to utopian writing is the celebration of traditionally female traits, values and tasks—e.g., nurturance, expressiveness, support for personal growth and development, a nonexploitive relation to the earth—such that they become positive goals for everyone.

Considering gender in traditional academic subjects is subversive work. It is transformational and reconstructive rather than just integrative. It is potentially creative for individual faculty. It could affect not only what we teach but the way we teach; it will probably start a process of continued consideration of other minority perspectives so that it may become more and more difficult to make general statements about anything. Nevertheless, it is work that is enormously intellectually interesting, if only because one's most basic assumptions are challenged.

Notes

1. Revision of Keynote Speech for workshop, "Gender-Balancing the Curriculum," conducted at Eastern Washington University, Cheney, Washington, Feb. 24, 1989.

2. Male rats were preferred in laboratory research because of the "complicating nature of the female hormonal cycle." The possibility that females could be the norm or standard and that the male hormonal cycle, in comparison, is lacking, was not considered.

3. To say that a process or social phenomenon is "gendered" implies differences between males and females with respect to that process or pattern. The suggestion is that the content of our knowledge would be different had more women been more actively involved in its production. It is important to realize that sex and gender scholars talk about sex differences at several different levels, and sometimes seemingly contradict themselves because they emphasize sex differences at one level yet question the existence of sex differences at another level. Sex differences at the individual level, for example, include personality traits and cognitive abilities, characteristics assumed to be more or less permanent, stable aspects of individuals. There is surprisingly little empirical evidence for stable sex differences at the individual level, despite at least 50 years of psychologists' and others' trying to document such differences. Close analysis of the data used to support the general hypothesis of sex differences at this level shows that there are few, if any, reliable differences. At best, sex explains 1–5% of the variance on any given trait. Even aggression, especially when studied experimentally, is not the male or "masculine" behavior researchers and the public think it is. Sex differences at the social structural/aggregate and interactional levels, on the other hand, include things like the gender gap in earnings, sex segregation in occupations, and sex differences in language use. Interactional and social structural sex differences appear to be more "real," because their magnitude (i.e., variance explained by sex) is much greater than that found for individual level variables and because they are amenable to sociological (vs. psychobiological) explanation. The gap between obvious sex/gender differences at the social structural level (e.g., sex segregation in occupations) and lack of evidence for differences at the personality level is itself an interesting issue in the sociology of knowledge.

4. Such questions quickly lead one into contemporary epistemological issues such as foundationalism, relativism, hermeneutics, the nature of paradigms, how science as a way of knowing is different from or similar to other ways of knowing, etc. To the question of what criteria we actually use to decide what is knowledge and therefore deserving of inclusion in the curriculum, I would propose that (1) agreement and consensus (for whatever reason) among scholars themselves is a basic element in this process; (2) the science-as-paradigm-transition thesis, as developed by Kuhn, at least partially fits many disciplines and subdisciplines, and (3) theories, explanations, and hypotheses that challenge but do not totally deny existent paradigms often gain credence in academia (Davis 1971). These are, of course, not mutually exclusive but overlapping categories.

5. For example, almost half of all employed women in the U.S. work in less than 50 different occupations that are at least 80 percent female. Further, over half of all men work in 229 different occupations that are at least 80 percent male (Reskin and Hartmann 1986:7). In other words, most job categories are filled by one sex or the other, but not both, and there are fewer women-dominated than men-dominated occupations.

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Table 1

William Perry's Scheme[1]	From Women's Ways of Knowing[3]
———————[2]	1. SILENCE. Women describe selves as mindless and voiceless, subject to whims of authority.
2. DUALISM. Knowledge consists of right answers. Teacher's duty is to give students "truth." Student's duty is to absorb it. "Authority-right-we" vs others.	2. RECEIVED KNOWLEDGE. Women see selves as able to receive and reproduce knowledge from all-knowing authorities but not capable of creating knowledge on their own. "Authority-right-they"
3. MULTIPLICITY. Though there is still a right way to find answers, world is divided between those things about which right/wrong can be determined and those about which not even authority knows. All opinions equally valid in this latter domain.	3. SUBJECTIVE KNOWLEDGE. Truth and knowledge seen as personal, private and subjectively known or intuited.
4. RELATIVISM, SUBORDINATE. Students realize need for evidence and support for opinion and interpretation.	4. PROCEDURAL KNOWLEDGE. Two types: separate and connected. Students invested in learning and applying "objective" procedures for obtaining and communicating knowledge.
5. CONTEXTUAL RELATIVISM. All knowledge is contextual.	5. CONSTRUCTED KNOWLEDGE. All knowledge as contextual. Women experience selves as knowledge creators, and value both subjective and objective strategies for knowing. Again, two types: separated and connected.
6-9. COMMITMENTS. Evolving commitments. Making commitments in world where knowledge and meaning are tentative.	Women's commitments less focused than men's. Women do more of a juggling act.

[1]From William A. Perry, "Different Worlds in the Same Classroom," *On Teaching and Learning*, pp. 1-13, May 1985.

[2]There is no equivalent to a "Silence" stage in the Perry scheme.

[3]From Mary Field Belenky, Blythe McVicker Clinchy, Nancy Rule Goldberger, and Jill Mattuck Tarule. *Women's Ways of Knowing*. Basic Books, Inc., New York, 1986.

Table 2

Sex Segregation in Undergraduate Student Major Distribution Boulder Campus • Fall 1985*

Depts/units in which over 60% of majors are female	Depts/units in which less than 40% of majors are female	Depts/units in which percent majors male or female is in 40-60 range
Anthropology	Chemistry	EPO Biology
EPOB-BioSciEd	Economics & pre-Economics	MCD Biology
Classics	Geology & pre-Geology	Geography
Communication & pre-Communication	Interdisc: Distributed Studies	German
Comm-CDSS	Interdisc: Computer Applications	Health: Pre-Med Tech
English	Math	History
Fine Arts	Philosophy	Interdisc: Asian Studies
French & Italian	Physics	Interdisc: Central and East European Studies
Health—all except pre-med tech	Political Science	Interdisc: American Studies
Interdisc: Humanities	Design & Planning	Interdisc: Individually Structured Major
Interdisc: Latin American	Engineering—all	Kinesiology
Linguistics	Business: Finance	Open Option
Oriental Languages: Chinese	Business: Management & Organization	Oriental Lang: Japanese
Psychology	Business: Mgmt Science & Info Systems	Political Science: International Affairs
Spanish & Portuguese		Political Science: Public Service
Theatre & Dance		Religious Studies
Women Studies		Slavic Language
Education		Sociology
Journalism & pre-Journalism		Business: Accounting
		Business: Envir & Policy
		Business: Marketing
		Business: Undetermined
		Law
		Music
		Pharmacy

* Adapted from CU-Boulder Census Data, May 1986

Table 3

Feminist Phase Theory (Tetrault's Version)[1]

1. MALE Scholarship.

   Women's relative absence is not noted or acknowledged.

2. COMPENSATORY Scholarship.

   There is awareness that women (as subject matter and as creators of knowledge) are underrepresented. There is conscious effort to include women who have excelled in the discipline and/or women who are like men.

3. BIFOCAL Scholarship.

   3A.[2] Human experience is conceptualized primarily in dualistic categories (e.g., male/female, public/private). There is a "complementary but equal" emphasis on both genders. There is a focus on documenting and explaining the devaluation of women.

   3B. Efforts to include women lead to insights that the traditional content, structure and methodology of the discipline are more appropriate to the male experience and are therefore inadequate.

4. FEMINIST Scholarship.

   Scholarly inquiry pursues new questions and categories that illuminate women's traditional history, culture, values, visions and perspectives. The diversity among women is recognized (e.g., interactions of race, sexual orientation, class). Efforts are made to reconceptualize knowledge in order to encompass women's experience.

5. MULTIFOCAL Scholarship.

   At every juncture in the process of knowledge formation, the variables of sex, gender, class, ethnicity, sexual orientation, etc. are taken into account. A multifocal, gender-balanced perspective is sought which will lead to a holistic view of human experience.

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[1]From Mary Kay Thompson Tetrault, "Feminist Phase Theory," *Journal of Higher Education* 56, 363-384, 1985.

[2]The distinction between Phase 3A and 3B is the reformulation of Nielsen and Abromeit (1989).